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EDITORIAL.

Retrospect.

"We live in deeds, not years; in thoughts, not breaths,
In feelings, not in figures on a dial,
We should count time by heart throbs. He most lives
Who thinks most, feels the noblest, acts the best." *Bailey.*

However strongly we may be impressed with the truth of the words that we "live in deeds not years" we may yet feel with equal force the importance of stopping when with the end of a year we have reached another mile stone. Though our individual lives, the generation in which we live, dwindle into insignificance when compared with the incomprehensible something called time, a single year, every month, each day may be of the greatest importance to us in the moulding of character. In the present steeple chase after fortune it would be well for us if with Walther von der Vogelweide we could occasionally say:

"Ich sass auf einem Steine,
Da deckt ich Bein mit Beine,
Darauf der Ellenbogen stand;
Es schmiegte sich in meine Hand
Das Kinn und eine Wange.
Da dacht' ich sorglich lange
Dem Weltlauf nach und ird'schem Heil."

Somewhat more than a year ago a German professor of physical chemistry roused the scientific world by a bold denunciation of scientific materialism. The address was published, republished, translated and subjected to minute criticism. The controversy has now subsided. As to whether science has taken a step forward or not the future may decide. This address may or may not mark a chapter in the development of human thought, but that it will have any immediate effect on human life or character seems very doubtful.

There is another materialism which is of graver consequence: **professional and commercial materialism.** Scientific materialism may have been a fad and have found many followers among the half-educated, would-be scientific minds, who imagined themselves as belonging to the intellectual four hundred of the enlightened nineteenth century. Professional materialism appears to have a deeper root than fashion.

The desire for worldly fame and fortune has always been strong in man. It appears, however, that at no time has it manifested itself more strongly and universally than at present. In the medical profession, which considers itself the noblest, most self-sacrificing calling, the desire for gain and for fame bordering on notoriety would be considered a scandal if the general public were not so largely travelling the same road to fortune and success. The price demanded by great surgeons for a single operation may be denounced as extortion, but the M. D. who sells his knowledge, though for a smaller sum, to the highest commercial bidder is in reality not an iota better. The physician who clamors for notoriety through the daily press by announcing to the general public his "new" and great "discoveries", before his colleagues have had time to pass judgment, is not only a menace to the best interests of his own calling, but to society in general. Yet such persons may all be "regulars",

"in good standing", honored members of state and national associations. The fact that they have their M. D. from a "regular" college of medicine appears to place them beyond reproach. They are not quacks like eclectics or homeopathists etc., but broad minded persons free from the narrowness of school. Such at least is the silent verdict of their colleagues. It seems to justify the statement of a careful observer who is very slow to condemn, that "the physicians' ethics is the almighty dollar."

In pharmacy the general drift is much the same. If the status of our calling were judged by the pages of ninety percent of our drug journals, it might be interpreted as being in a feverish "struggle for publicity." Advertisements, either the straight-forward ad or the reading notice, seem to make up even the dreams of the members of a "down trodden calling." That some of the results are comparable to nightmares is passing but lenient judgment. How many druggists have pondered over the suggestive vignette heading the column of the "struggle for publicity" in one of our new journals: a trio of cackling geese? But there is a more serious phase to this question.

Competition, far from being the soul of business, is in this case its cancer. It breeds foul business methods, exaggeration of virtues, claiming of virtues where there are none, substitution and adulteration, bogus and fraud, counter-prescribing and self-dispensing, free dispensaries and the department store, ten cent prescription drug stores, etc. Those journals which are constantly supplying "tips on advertising" seem to forget that this proceeding carried to its logical conclusion is not only nauseating but carries with it the element of self-destruction. Our standing army of advertisers are sucking the life-blood out of business, just as the standing armies of Europe consume much of the best energy of the human race. Neither produce, both consume. Both are evils from the economic as well as the moral standpoint. That this moral standpoint is not an imaginary one is evidenced by the recent laws passed against unfair competition in Germany, also by the supplication from the Agricultural Department at Washington to prevent the analyses of the government chemists from being grossly distorted by unscrupulous advertisers so as to produce the opposite effect from that which was intended.

These remarks will no doubt be brushed aside by many with the judgment: "pessimistic". Such persons the writer would recommend to attend the meetings of our state and national associations and listen to the remarks made by practicing pharmacists about the gloomy future which they are facing.

Scientific Restoration. When Prussia had been humiliated by Napoleon to a degree which seemed to forever wipe it from the face of Europe as a state, the Prussian ministry laid the foundation of its reorganization by the establishment of a new university at Berlin to which were called many of the leading minds of Germany. Prussia to-day is not only the first state of the German Empire, but its statesmen have figured foremost in European politics and its nine universities have attracted the intellectual youth of the world. Such a power have these as well as other German universities become that even English manufacturers are attributing Germany's superiority in industrial activity to the scientific spirit that pervades its industries. The result is felt not only in the factories in which are employed hundreds of men with university training, but throughout the commercial world.

In the far Orient, Japan has taught the world the same lesson. In commenting upon the Calendar of the Imperial University of Japan in Tokio for 1894—'95 a writer makes the following statement: "To study this modest pamphlet in the perspective of the past quarter of a century is to understand largely the secret of Japan's life and power on the threshold of the year 1896."

If within a century science and culture have given Germany the universally acknowledged supremacy in the intellectual world and are causing fear and trembling in the once supreme commercial nation of the British Isles; if the same factors working in a semi-barbarous nation for only a quarter of a century are causing the western commercial world to glance with suspicious eye westward across the wide Pacific, what may not we expect if we are to adopt them as our motto and watchword. Commercial remedies have been tried ad nauseam. The salvation of pharmacy like that of any calling that demands more than manual labor lies in the highest possible education of its ranks: not the training of the shops primarily. such as the English manufacturer has given his apprentice to his sorrow, but the broad university education which the German manufacturer, e. g., demands of his chemist.

Though, probably less has been said and written about **pharmaceutical education** during the past year than during the years just preceding, fully as much has been actually accomplished for advancement. Both Old and New England have quietly but boldly stepped forward. Those who had modelled their courses after Bloomsbury Square will now have to remodel them to keep up with the times. Inasmuch as this course was considered the model course for England and even for schools outside the British domain, this change is significant.

Whereas Americans are indulging in comparative rest for the moment with regard to the apprenticeship system, Europe is being stirred by the same problem. In France the suggestion by the government to reduce the apprenticeship and increase the time spent at college is producing the

same clamor on the part of the pharmacists that the suggestion of its abolition produced in this country. The editor of the London Pharmaceutical Journal in commenting on the inadequacy of the old course at Bloomsbury Square says of the apprenticeship system: "But that system in its entirety has proven incompatible with the trend of modern progress, and it has become necessary to find some other system than apprenticeship, whereby the efficient training of pharmacists may be ensured." Dr. Sprinfeld in his brochure that has created so much excitement throughout Germany, in commenting on the present position of pharmacy in Germany claims "die deutsche Apotheke ist zur Heranbildung von Lehrlingen unzureichend geworden."

Every one seems to recognize that the apprenticeship in its old form is doomed. Those who have advocated its abandonment can afford to remain quiet when college after college is dropping the experience clause for graduation. When the action of colleges has become uniform in this respect then it will be time to combat the practice of druggists to take apprentices, if this should still be necessary. Those who still cling to traditions must realize the modern trend of professional and technical education. The few who still blow away at the trumpet of resurrection do so from sheer ignorance or from "intelligent prejudice." Let them blow: *Caesar morituri salutamur.*

Nothing will tend more to redeem pharmaceutical education and pharmacy than to submit the pharmaceutical student to the broadening influence which results from daily intercourse with students in other departments of science, arts and letters. Whereas not many years ago the independent colleges of pharmacy were ridiculing the attempts at pharmaceutical education made by universities, some of the oldest colleges are to-day seeking affiliation with larger and broader institutions of learning. The danger of association by name and by name only, without the inculcation of the true university spirit and the broadening effect produced by the constant intercourse with those of other departments of learning should not be overlooked. If affiliation of colleges with universities is to mean that the pharmaceutical students must attend the concerts of the university glee and banjo clubs, the games of the foot-ball eleven, and make known their presence by their yell, if affiliation is to mean this and little more, then we may with good reason regret such educational sham.

A German literary journal summarized the present status of German pharmacy by stating: "Es handelt sich . . . . darum . . . . ob die Pharmacie endlich das Recht erlangen soll, an den Culturaufgaben der Menschheit mitzuarbeiten." The editor of a pharmaceutical weekly recently burst forth with the words: "Erlösen wir die Pharmacie aus den unwürdigen Banden der Halbbildung." These utterances apply to America as well as to Europe. No education can be too good for the pharmacist of the future.

The same reader who brushed aside the earlier statements of the writer as pessimistic, if he has had the patience to plod his way through the succeeding paragraphs, will no doubt be inclined to dispose of the above by designating them as idealistic, impractical and impossible. Nothing is impossible to him who wills.

The advocates of the **metric system** possibly have received as many set-backs as any missionary to a foreign land. But they are not discouraged and continue with renewed energy their missionary work among the intellectually conservative. The remark by a representative from Kentucky that he had made the remarkable discovery that whisky could not be measured by the liquid measure of the metric system, may be taken in all seriousness by the conservative British headed by Sir Edwin Arnold, or as a good joke by the more humorous American, it will serve simply as a stimulus to combat both ignorance and intellectual prejudice.

It is impossible within the scope of an annual retrospect to even briefly review the natural sciences correlated to pharmacy. A year ago **bacteriology** seemed to call for special mention on account of the importance bacteriological remedies had acquired. The number of these preparations has increased, but the unfortunate case of Langerhans at Berlin gave rise to more comment than the improvement of bacteriological remedies or the publication of the first general scientific treatise on bacteriology from a purely biological and philosophic standpoint.

Physiological chemistry is also active in increasing our materia medica. Glandular therapy with its host of new remedies is at present the popular fad. Whereas physiological chemistry is active in the attempt to place these remedies as far and as fast as possible on a scientific basis, the medical quack has been quick to appeal to a morbid mental status of the public mind in advertising his remedies for all conceivable ailments. Every organ yields its own particular remedy, so there need be no fear of abuse any longer, because sheep, cattle and swine can readily supply the waste.

While the quack is sowing his seeds on a field well prepared by self medication with secret remedies commonly known and misnamed as patent medicines, physiological chemistry is going begging even at German universities. The only chair of physiological chemistry at a Prussian or Imperial University, namely that at Strassburg, which was vacated by the death of Prof. Hoppe-Seyler, has not yet been filled. Since then the chair at the University of Freiburg has also been vacated by

the death of Prof. Baumann, a former student and assistant of Hoppe-Seyler.

While physiological chemistry appears to be neglected, **physical chemistry** is having its "boom". The past year has witnessed the migration of Prof. Van't Hoff from Amsterdam to the University of Berlin where he is expected to conduct research in his particular branch. We have also witnessed the dedication of a new building to be devoted exclusively to physical chemistry at the University of Goettingen, where only six years ago Dr., now full Professor and Director Nernst, a former student of Arhenius and Ostwald, habilitated himself as privat-docent. Prof. Ostwald also is to have a new institute at the University of Leipzig. Such is the rapid progress this branch of chemistry has outwardly made in recent years, not taking into consideration the erection of electro-chemical institutes at polytechnicums and technical schools. Pharmacy has been touched but little thus far by both branches of chemistry. It is true that at a few schools a laboratory course designated physiological chemistry is given, but the performance of a few analytical physiological-chemical manipulations, such as are called for in the rudimentary testing of urine and the like, can hardly be called a course in physiological chemistry.

Several university schools offer courses in physical chemistry to their advanced students. Although these courses are of greater significance, the most important work in this direction lies in the application of physico-chemical as well as physiological methods to the study of pharmaceutical problems. To have supplied a scientific theory for the explanation of the antiseptic, toxicological, etc., action of medical chemicals is an achievement of the past year that deserves mention in a pharmaceutical retrospect of the year 1896.

It may be said that such work lies without the province of pharmacy and should not be encouraged in an educational pharmaceutical institution. Such arguments, which are advanced not only in this country but in Germany as well, are on the same plane with the statement that the pharmaceutical student can be educated out of his profession. Both are the saddest comment ever made by pharmacists with respect to their own calling.

If the training of the pharmacist is to lie simply in the direction of counting ready made pills or tablet triturates, this argument holds good, but then it is also self destructive. There is no need whatever of training men for work of this calibre. The physician can count tablets as well as the pharmacist and makes liberal use of his ability, to his own satisfaction and that of the patient. But if the pharmacist is to have a scientific insight into his proper duties, no education is too good, and no research too scientific. If pharmacists are to have a hand in the evolution of the "Kulturaufgaben" that now interest mankind, they must give as well as take, and must give freely. To lead a parasitic existence, to digest merely that which is conveniently supplied by the general sciences, is unworthy of any calling, no matter how humble it may be.

New Recruits. Fortunately there is a small number of younger men whose ideas are not limited by the horizon of the colonial drug store and its present outgrowth, but who although willing to be stigmatized heretics and cranks, are not willing to surrender their ideals. The past year has again added several to this small army. Let us hope that they will not be discouraged, but with the trowel in one hand and the sword in the other fight for the redemption of their beloved pharmacy.

In Memoriam. While we have reason to rejoice over the advent of new recruits, we should not be forgetful of the veterans who have ceased to battle. Whereas a year ago the recorder of pharmaceutical events was fortunate in being able to state that none of the leading pharmaceutical scientists had been taken from their fields of activity by death, this is not the case at the close of the year 1896. This year has spared pharmacy no more than the branches of science correlated to it. Again and again it became a painful duty to record the demise of scientific workers directly connected with pharmacy or who indirectly helped materially in shaping its destinies.

Pharmaceutical Literature. Considerable activity has been displayed during the past few years in the writing of pharmaceutical text-books. In place of a practical monopoly, which existed formerly in this country, a healthy competition has set in that has been productive of much good. One thing, which American publishers as well as authors have not yet sufficiently learned, is a greater division of labor. No American treatise on pharmacy can compare in this respect with some of the German publications in the same field.

Pharmaceutical journalism has undergone no material change during the past year. The several new journals that have sprung up seem to be indicative but of the usual growth. The Pharmaceutical Review is not one of these new journals as some of its contemporaries seemed to be anxious to inform the public. The change from the German to the English language, which seems to have caused this rumor, has received nothing but favorable comment. It is our pleasant duty to thank all those who in one way or another have during the past year assisted in the maintenance of this journal. The Review extends to all its patrons and friends the greetings of the season.

E. K.

ORIGINAL CONTRIBUTIONS.

Native Drugs of Ceylon.

By Prof. *Rodney H. True.*

Among the exhibits from Ceylon at the Columbian Exposition in Chicago was a collection of crude Singhalese drugs. At the close of the Exposition, these specimens became the property of the School of Pharmacy of the University of Wisconsin and were placed in the pharmacognostical collection. Since in great part these drugs are unknown to occidental medicine and pharmacy, the writer hopes to submit from time to time, as occasion may permit, the results of a more or less thorough anatomical study of these drugs. The quantity of each being small, a chemical investigation of the constituents is unfortunately out of the question.

The underlying principles of Singhalese medicine are briefly detailed in the official catalogne of the Ceylon exhibits. Since this has already found its way into American print[1] without essential change, the reader is referred to that place of publication.

The drugs are derived from plants indigenous in Ceylon or growing wild there. Several of the plants enumerated in the list are of western origin, being introduced in the East where they found a congenial home and in time were able to maintain themselves wild. Among these may be mentioned *Cissampelos Pareira* L., formerly erroneously believed to be the source of Pareira brava root. This plant is a native of the West Indies, in all probability. *Cassia alata* L. is another example. *Cardiospermum halicacabum* L. is regarded as indigenous in sub-tropical North America, it being also a common plant in the south-western part of the United States. Several natives of Asia found in our list have been introduced into the New World where they have found a more or less extended distribution. In this class belong the following plants observed in South America and the West Indies: *Abrus precatorius* L., *Aerua lanata* Juss., *Cassia fistula* L., *Desmodium triflorum* DC., *Eclipta erecta* Lamk., *Hydrocotyle Asiatica* L., and *Wedelia calendulacea* Less. *Cyperus rotundus* L., nut grass, is a common and troublesome weed in the southern and south-eastern parts of the United States. *Eleusine Indica* Gaertn., the dog's tail or wire grass, is likewise abundant in the southern United States.

Bassia longifolia L.

The genus *Bassia*[2] of the *Sapotaceæ* includes trees of tropical Asia having a milky juice, leathery leaves, quite large flowers and fleshy, berry-like fruits which in some species are edible. *B. latifolia* L., *B. longifolia* L., *B. butyracea* Rxb., *B. Parkii* Hook. and others may be mentioned. The seeds contain no endosperm but the large fleshy cotyledons have an abundant supply of oil which serves many purposes and goes under many names. Some species yield a guttapercha of useful quality.

[1] H. Kraemer, Am. Journ. Pharm., 1894, p. 530.

[2] J. Moeller in Real-Encyclop. d. gesammten Pharmacie. 1887. II, p. 165.

Bassia longifolia[3] L. is a tree reaching a height of 40 feet; all the young parts rusty tomentose. Leaves lanceolate, narrowed at both ends, glabrous, distinctly nerved; stipules linear; petioles 1 to 2 inches long, tomentose, in dense clusters near the ends of the branches. Is common in Western Mysore, Malabar, and the Cicars as well as in Ceylon. It goes under several native names. "Moha" in Hindustanee, "Maua" in Bengalee, "Illupai" in the Tamil language, "Mi" in Singhalese.

This species as well as *B. latifolia* and *B. butyracea* have long been known. Susruta[4] describes the spirituous liquor prepared from the flowers as heating, astringent, tonic and appetizing. Inscriptions[5] on copper plates discovered in the district of Etawah dating from A. D. 1103 and 1174 record grants of villages to Brahmins by the kings of Kanauj and enumerate the imports that were to be levied. These include taxes on mines, saltpits, and the trade in precious metals, also on "mahwa" (*Bassia*) and mango trees and on cuscus grass (vetti-ver). Ibn Batuta[4] who visited India A. D. 1332 mentions "Mahwa" and remarks that the flowers when dried in the sun taste like figs.

Bassia longifolia receives the following mention in the official catalogue of the Courts of Ceylon:

"The timber is heavy, close, and straight grained, very flexible and durable. It is valued for keels of ships, and for planking below the water-line; it is also used in the construction of carts and for bridges." p. 112.

In Sanscrit, the *Bassia* species are referred to collectively under several names: "Madhuka" and "Madhudruma", honey tree; "Madhupushpa", honey flower; "Madhusakha", sugar flower; and "Kolaphala", fruits of the Kols, a tribe subsisting in great part on the flowers of the *Bassia*, collected and dried by them. These trees afford a number and variety of useful products. The thick, red-colored bark with a rough, brown surface is used in a decoction as an astringent. The milky juice of the bark is prescribed in India as a remedy for phlegm and rheumatism, as an astringent and promoter of suppuration. A kind of guttapercha is yielded by several species. The bark of *B. longifolia* yields three percent of caoutchouc when extracted with benzol. In general, the *Bassia* guttapercha[6] is hard at ordinary temperatures, but softens in hot water and can then be moulded by the hand. It is best mixed in equal proportions with the ordinary article.

The trees[7] produce cream colored flowers in March and April and in August a reddish-yellow fruit one to two inches long, which contains from one to four light brown seeds follows. These flowers are collected and dried and are consumed as food especially in the agricultural districts of India. At first sight the dried flowers resemble raisins, but on closer inspection they are found to be fleshy, sticky, compressed, hollow bodies about six-tenths of an inch long and nearly as broad. When soaked up they become nearly globular and the numerous anthers are seen attached by very short filaments to the inside of the corolla. The taste is sweet and acid. The fleshy substance, con-

[3] Warden, Dymock and Hooper. Pharmacographia Indica, II, p. 355; also, Kraemer, Am. Journ. Pharm., 1894, p. 535.

[4] Pharmacog. Indica II, p. 355.

[5] Flückiger and Hanbury, Pharmacographia, 2d ed., p. 728.

[6] Heckel and Schlagdenhaufen, Compt. Rend. C. (1885), p. 1238.

[7] Pharmacogr. Indica, II, p. 261.

sisting mainly of parenchyma, is found to contain crystalline masses of sugar. The flowers of *B. longifolia* were found by Riche and Remont[8] to contain 60 percent of fermentable sugars and 8.5 percent of crystallizable sugar. As would be expected, this source of fermentable material is not left unutilized. A spirituous liquor, "Madhu-madhavî" or "Madhvásava", described in Susruta, is from *Bassia* flowers. In the Bengal districts of India where the spirit is made, the fermentation takes place in earthen vessels containing from ten to twenty gallons of fluid and as many *seers* (1 *seer* = 2 lbs.) of the flowers, and is continued from two to seven days according to the temperature. The stills are of the rudest pattern. On the average, one *maund* (80 lbs.) of flowers yields 2.12 gallons of proof spirit. This is rich in fusel-oil, the ordinary native distilled article containing as high as 0.4 percent. From the sugary flowers a coarse kind of molasses is prepared.

An analysis of the air-dried flowers of *B. latifolia* by Church[9] showed cane sugar, 3.2 percent; inverted sugar, 52.6 percent; ash, 4.8 percent; cellulose, 2.4 percent; albuminous substances, 2.2 percent.

The seeds of *B. longifolia* and of related species are very rich in a fatty oil which is obtained from them by expression. This fat melts at 25.3° C. and according to Oudemanns[10] consists of 79 percent of stearic acid. It is used by the natives for very many purposes. It serves as a food, being eaten in the manner of butter; soaps are prepared with it; it is used in making pomades, and furnishes a suitable material from which to make candles. An analysis[11] of the seeds of *B. longifolia* by E. Valenta yielded the following results: Fat, 51.14 percent; alcohol extract, 7.83 percent; tannin, 2.12 percent; starch, 0.07 percent; mucilage, 1.65 percent; sol. albumen, 3.60 percent; extract, 15.59 percent; insol. proteid, 4.40 percent; total ash, 2.71 percent.

The seeds of *Bassia longifolia* are at hand and since as far as the writer has been able to ascertain no particular attention has been paid to its microscopic structure, a somewhat detailed description follows (Fig. I, 1).

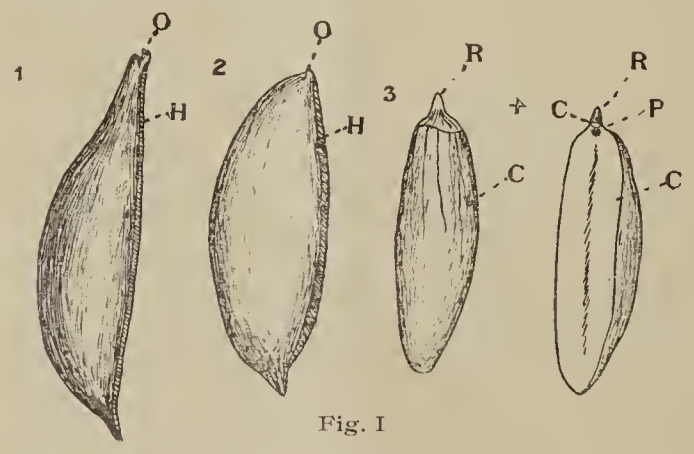

Fig. I

The seeds before us are from 3 to 4.5 cm. long and about 1 cm. wide and have a smooth, shining, chestnut colored shell. They are very narrowly elliptical, at each end prolonged into a more or less marked beak-like projection. The micropylar end is somewhat broader and is marked by a slight notch near the tip of the beak. Owing to mutual pressure in the fruit, the seeds are usually more or less compressed laterally, one side generally being flattish, the other convex. The hilum or region of attachment extends along the inside edge of the seed, as a long, pale scar with a roughish surface running nearly the entire length.

Other seeds present under this name are of a somewhat different appearance. They are much broader, reaching with the above length a width

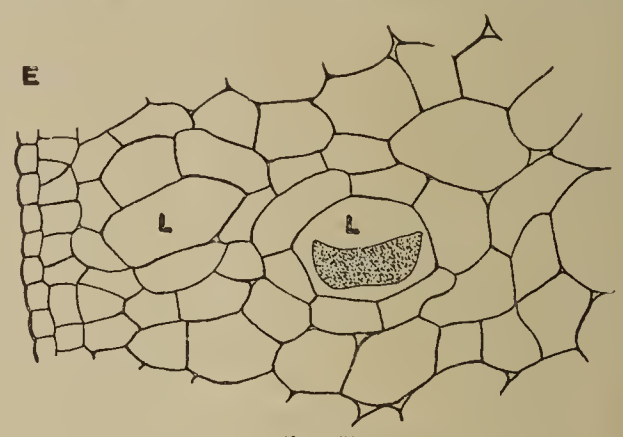

Fig. II.

of 1.5 cm. The beaks are shorter, being merely short projections at the ends. In color, this kind is lighter than the narrower form described above and less shining. The following descriptions of structure are drawn from the narrower form which makes up the greater part of the specimen.

The shell is thin, hard and brittle, thickened somewhat along the hilum. The delicate, inner integuments of the seed partly adhering to the embryo and in part coming away with the shell, are of a light, brick-red color traversed by pale veins. The seed contains no endosperm, the dicotyledonous embryo in the dried specimen scantily filling the shell. The fleshy cotyledons are straight and show no veining; in cross section they are convex on the outer faces, concave on the inner faces. The radicle is short, the plumule hardly to be seen. The cotyledons cut in the brittle, waxy manner characteristic of firm oily seeds. The exposed surfaces are yellowish - brown in the dried seed and of a dull appearance. Each cotyledon is traversed lengthwise by three veins, one median and larger, two lateral when seen in transverse section.

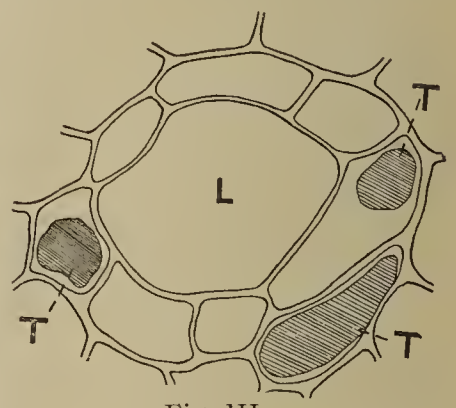

Fig. III.

When examined microscopically in cross section, the cotyledons are seen to be almost entirely composed of parenchyma cells filled to a great degree and much obscured by oily masses firm at the usual temperatures. Certain parenchyma cells scattered in abundance throughout the tissue of the cotyledons, present in great number near the periphery, attract attention through a slight yellowish coloration. They are filled completely with a waxy, homogeneous content that gives a very characteristic reaction with reagents. All points to the presence of considerable tannin, the masses occupying the particular cells in question

[8] Journ. d. Pharm. e. d. Chim., 1880.
[9] Gardner's Chronicle, Jan. 16, 1886; Am. Journ. Pharm., 1886, p. 250.
[10] J. Chim. Min., 1863, p. 333.
[11] Dingl. Polyt. Journ., Vol. 251, p. 461; Am. Journ. Pharm., 1885, p. 108.

appearing to be saturated with it. This occurrence of tannin in considerable quantity (as also appears from the analysis above) in a seed is of some interest since tannins[12] are rarely found in seeds and then in small quantities. In treating with the usual reagents, the masses occupying the cells are apparently not affected beyond a change of color, in no reagent being dissolved. To render the sections clearer by removing the fatty cell contents, the sections were soaked in sulphuric ether, followed by ordinary alcohol and mounted in glycerine. Concentrated sulphuric acid dissolved the cell walls but the contents in question appeared to be unaffected beyond assuming a yellowish-brown color. Treatment with ferric chloride and ferric sulphate brought out a bluish-black color. When treated

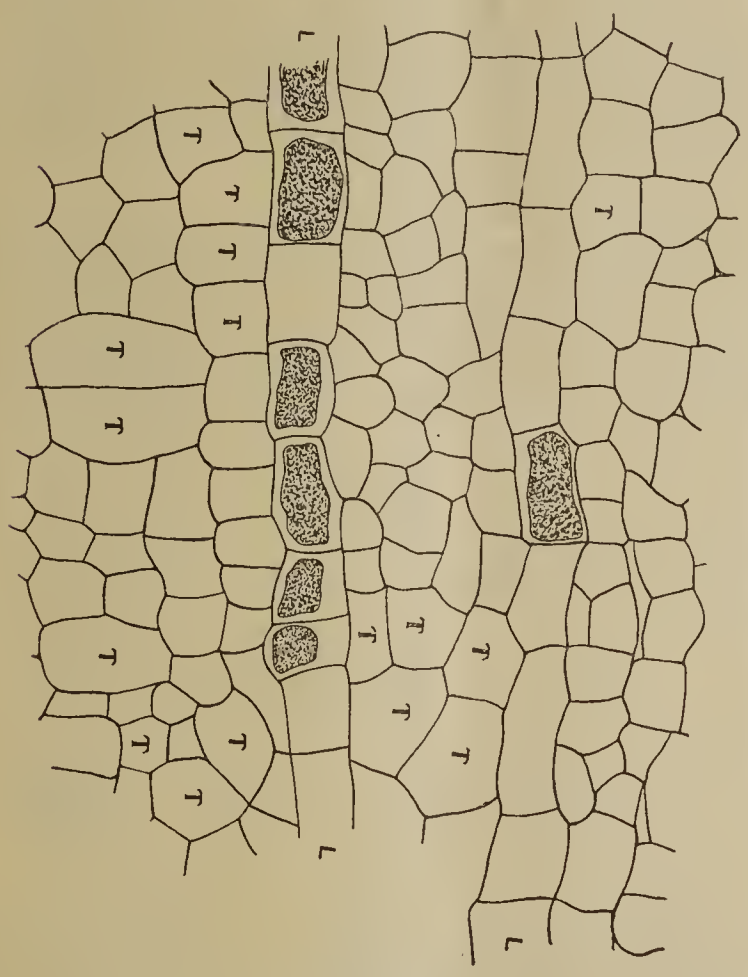

Fig. IV.

with concentrated sulphuric acid, the walls of the tannin sacs dissolved without evidence of modification, thus indicating cellulose.

In the transverse section of the cotyledon, certain cells of unusual diameter generally surrounded by smaller cells of a more or less markedly flattened outline are seen. Thus an appearance strongly suggesting a glandular structure is seen. These cells like the tannin sacs are more abundant toward the periphery. They are occupied by a dusky, palish, somewhat granular mass, which retains its form on being freed from the cell. In longitudinal section, these larger elements are found to be cells of usually greater length than the surrounding tissues, arranged in a longitudinal series that may extend for considerable distances in an approximately straight course through the parenchyma. A granular mass occurs in each cell of the series. The conduct toward reagents indicates that these numerous rows of large cells belong to the already considerably developed latex system of the embryo. This agrees with the results of Wilhelm[13] who finds that the latex in the members of the *Sapotaceæ* studied is always in closed sacs which are always surrounded by parenchymatous elements and differ from these fundamentally only in their contents. No evidence that these rows of cells branch or coalesce was to be found. We have here in the embryo apparently an already well developed system of latex reservoirs.[14]

The epidermis bounding the cotyledons is made up of small, longitudinally elongated, brick-shaped cells. The walls are thin, the outer surface is provided with a thin cuticle. Not rarely the epidermal cells are found filled with the waxy, tannin-containing mass above described. The presence of such a body in the epidermis is a rather unusual occurrence.

The fibro-vascular bundles are small, the xylem being reduced to half a dozen elements or less. No thick walled mechanical tissue accompanies the bundle.

Occasionally, fragments of the adhering seed coats appear in the section, but any description of them in view of the absence of younger stages of development would be of little value.

Explanation of figures.

I. 1. Side view of seed of *Bassia longifolia* L. Longer form. Natural size.
2. Side view of seed of shorter form. Natural size.
3. Side view of embryo removed from shell. Natural size.
4. Embryo with one cotyledon removed. Natural size.
O. Micropylar opening.
H. Ilium.
R. Radicle of embryo.
C. Cotyledon of embryo.
C′. Point of attachment of cotyledon removed.
P. Plumule.

II. Portion of transverse section of cotyledon. Magnified 180 diameters.
E. Epidermis of cotyledon.
L. Latex reservoirs.

III. Transverse section of latex reservoir in detail. Magnified 300 diameters.
T. Tannin-containing cells and the masses in the same.
L. Latex reservoir.

IV. Portion of longitudinal section of cotyledon. Magnified 180 diameters.
L—L. Latex-containing cells in two series.
T. Tannin-containing cells.

Rectification of Turpentine Oil.

By *Edward Kremers.*

(Report of Research-Committee G, U. S. P. Revision.)

European pharmaceutical treatises have as a rule recommended the rectification of turpentine oil for pharmaceutical use. The U. S. Pharmacopœia, in its last edition, has followed the German Pharmacopœia and has adopted a rectified oil in addition to the commercial article. Process as well as properties of product are practically the same as described in the Ph. Ger. ed. III.

Turpentine oil has been rectified frequently, yet there appears to be no record of a detailed study of its rectification. The various pharmacopœias place specific gravity and boiling point of the rectified product within narrower limits than those of the crude commercial article. Any one who

[12] H. Trimble. The Tannins, I, 1892, p. 18.

[13] Wilhelm—Cited in De Bary's Comparative Anatomy of the Phanerogams and Ferns, p. 151.

[14] De Bary—ibid., p. 191.

has rectified turpentine oil with lime-water or milk of lime, or with water pure and simple, well knows the difference in the odor between the recently rectified product and the crude oil. This may be deemed sufficient and for all practical purposes very likely is. To make a detailed study of such process simply or primarly for its own sake, possibly would not have tempted the writer any more than any other person. Inasmuch as specimens of pure natural pinene were desired for other purposes, the question, however, seemed of sufficient interest to meet at least secondary consideration. The results obtained are not totally devoid of interest and may merit publication for the benefit of the U. S. P. Revision Committee.

Several gallons of commercial American turpentine oil were purified according to a slight modification of the process given in the latest editions of the U. S. and German pharmacopœias. The sp. gr. of the crude oil was 0.872 at 20°. In a 100 mm. tube it turned the plane of polarized light 10.13° to the right, hence $[\alpha]_D = +11.616°$.

In order to rectify the oil, 1000 ccm. of the commercial article were shaken with an equal volume of milk of lime. The mixture was set aside for at least twelve hours. It was then distilled with water vapor, fractions of 200 ccm. each being collected. About four-fiths of the oil was thus recovered, the last fifth being rejected.

Table I.

	Fraction.	Sp. Gr. at 20°.	α for 100 mm. tube.	$[\alpha]_D$
Experiment I.	1.	0.865	+10.540°	+12.184°
	2.	0.867	+10.520°	+12.133°
	3.	0.868	+10.500°	+12.095°
	4.	0.8682	+10.098°	+11.633°
Experiment II.	1.	0.864	+12.158°	+14.180°
	2.	0.866	+10.720°	+12.297°
	3.	0.8702	+ 9.940°	+11.429°
	4.	0.8722	+ 9.340°	+10.700°
Experiment III.	1.	0.864	+12.070°	+13.968°
	2.	0.8641	+11.508°	+13.315°
	3.	0.8647	+10.583°	+12.237°
	4.	0.8697	+ 8.851°	+10.017°
Experiment IV.	1.	0.8652	+12.050°	+13.915°
	2.	0.867	+11.060°	+12.756°
	3.	0.8703	+ 9.810°	+11.271°
	4.	0.8748	+ 9.036°	+10.329°

In one instance, however, the oil was not collected in fractions. The four-fifths recovered by distillation with water vapor had a pleasant odor. Dehydrated with exsiccated sodium sulphate its sp. gr. was 0.864 at 20°. In a 100 mm. tube it turned the plane of polarized light 10.558° to the right, hence $[\alpha]_D = +12.177°$. It will thus be seen that a rectification over milk of lime with a recovery of but four-fifths resulted in a brilliant oil, of pleasant odor, with lower specific gravity and higher rotatory power.

Most of the oil, however, as already stated, was recovered in fractions. The difference in specific gravity and rotatory power of these fractions in four sets of experiments will readily become apparent from the first table.

From these results it becomes apparent that corresponding fractions were similar in properties, also that with diminishing volatility of the fractions with water vapor there is a slight increase in specific gravity and a somewhat greater diminution of rotatory power.

Inasmuch as these fractions had not been dehydrated it was of interest to ascertain what effect moisture had upon the sp. gr. and rotatory power of the same. The fractions from experiment II were therefore dehydrated with exsiccated sodium sulphate. As will be seen from the tabulated results (Table II) the differences are but very slight.

Table II.

Fraction.	Sp. Gr. at 20°.		$[\alpha]_D$	
	Before Dehydration.	After Dehydration	Before Dehydration.	After Dehydration.
1.	0.864	0.867	+14.180°	+14.141°
2.	0.866	0.868	+12.297°	+12.503°
3.	0.8702	0.873	+11.429°	+11.422°
4.	0.8722	0.8733	+10.700°	+10.706°

It being demonstrated that the corresponding fractions of the various experiments were so nearly alike they were mixed, dried and fractionated. Thus fractions 1 of experiments I, II, III and IV were mixed and marked hereafter fraction A., fractions 2 of experiments I, II, III and IV were mixed and marked fraction B, the others C and D respectively. The result of the fractionation of fractions A, B, C and D are tabulated (Table III), the yield at the various temperatures being indicated in cubic centimeters.

Table III.

	—154°	154—155°	155—156°	156—157°	157—158°	158—159°	159—160°	160—161°	161—162°	162° +
A.	101 ccm.	162 ccm.	188 ccm.	99 ccm.	51 ccm.	31.5 ccm.	15.3 ccm.	8.5 ccm.	12 ccm.	38 ccm.
B.	25.5 "	87.5 "	139 "	211.5 "	92 "	82 "	30 "	15.5 "	15 "	55 "
C.	17 "	37 "	99 "	141.5 "	117.5 "	114 "	52.5 "	24.5 "	39 "	104 "
D.	11 "	19 "	49 "	68.5 "	127.5 "	115.5 "	37.5 "	30.5 "	36 "	116.5 "

The table appears selfexplanatory and, therefore, further comment is unnecessary. In order to ascertain whether like fractions possessed similar specific gravities and rotatory power fractions 155—156° A, B, C and D and fractions 156—157° A, B, C and D were examined with regard to these constants. The results are given in table four.

Table IV.

	155—156°.		156—157°.	
	Sp. Gr. at 20°.	$[\alpha]_D$	Sp. Gr. at 20°.	$[\alpha]_D$
A.	0.8636	+14.594°	0.864	+13.345°
B.	0.8622	+14.633°	0.863	+13.360°
C.	0.8640	+13.987°	0.865	+13.272°
D.	0.8660	+13.313°	0.8643	+13.387°

Inasmuch as the differences are surprisingly slight, corresponding fractions were poured together in order to simplify refractionation. These four fractions —154° A, B, C and D were united and marked simply fraction —154°; fractions 154—155° A, B, C and D were united and constituted fractions 154—155° without further distinctions etc. The refractionation was conducted very carefully with a column, an Anschuetz thermometer being used. The barometric pressure was also noted before and after refractionation of each fraction. The barometric pressure varied but little: the minimum pressure being 733 mm. at 27°, the maximum pressure 737 at 24°. A detailed record of the barometric pressure for each fraction therefore appears unnecessary. The results of this refractionation are enumerated in the following table. This table also is largely selfexplanatory. Attention, however, should be called to the fact that the differences in the boiling points of corresponding fractions of table III and table V are due to the use of an ordinary, long thermometer in the first fractionation; and a short Anschuetz thermometer, the mercury of which was entirely in the vapor, in the second fractionation.

Table V.

Boiling Point of Fractions.	Yield.	Sp. Gr. at 20°.	α for 100 mm. tube.	$[\alpha]_D$
—157°	74 ccm.	0.864°	+13.788°	+15.958°
157—158°	190 "	0.864°	+13.688°	+15.833°
158—159°	950 "	0.864°	+13.343°	+15.439°
159—160°	425 "	0.865°	+11.395°	+13.179°
160—161°	228 "	0.866°	+ 9.796°	+11.317°
161—162°	175 "	0.867°	+ 9.325°	+10.755°
162—163°	90 "	0.868°	+ 7.536°	+ 8.681°
163—164°	43 "	0.870°	+ 6.445°	+ 7.408°
164—166°	67 "	0.873°	+ 6.286°	+ 7.166°
166—168°	68 "	0.876°	+ 5.788°	+ 6.607°
168—170°	70 "	0.879°	+ 5.401°	+ 6.144°
170—174°	42 "	0.882°		
174—178°	30 "			
178—182°	25 "			
182—186°	16 "			
186—190°	9 "			
190—194°	5 "			
194—198°	5 "			
198—202°	5 "			
202°+	148 "	0.997°		

The conclusions which these figures permit are not difficult to draw. The work of this laboratory may in the near future call for the preparation of more pure pinene. Before making any suggestions the writer, therefore, prefers to wait until more evidence of the above kind is at hand. One point, however, which is independant of the purification of the oil, the writer should like to emphasize, viz. that the rectified oil will readily undergo the process of so-called resinification under the ordinary conditions of storage on the shelves of the drug store. Evidence that even the very best of the above fractions will undergo rapid change under such conditions is at hand and may be utilized later. The writer is indebted to Mr. A. H. Miles for the experimental work involved in securing the above data.

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TRANSLATIONS.

Reagents and Reactions known by the Names of their Authors.*

Based on the original collection by *A. Schneider,* revised and enlarged by Dr. *Julius Altschul.*

Luecke's test for hippuric acid. Upon heating the residue obtained by boiling to dryness a mixture of hippuric and concentrated nitric acids, a strong odor of nitrobenzene is developed.

Lugol's solution for identifying albumen in the urine is a solution of iodine in potassium iodide which has been acidulated with glacial acetic acid.

Lunge's test for nitrous acid depends upon *Griess'* reaction (q. v.) with sulphanilic acid and α-naphthylamine, which according to *Lunge* are kept on hand dissolved in dilute acetic acid. Solutions containing nitrous acid are colored red with this reagent. For quantitative determinations the following is used:

Lunge & Lwoff's test for nitrous acid. Colorimetric test by means of a solution of 0.1 g. α-naphthylamine in 100 ccs. water, 5 ccs. glacial acetic acid and 1 g. sulphanilic acid in 100 ccs. water. The normal solution contains $\frac{1}{100}$ mg. nitrogen from nitrites per cc. (0.0493 g. sodium nitrite are dissolved in 100 ccs. water and 10 ccs. of this solution diluted to 100 ccs. with concentrated sulphuric acid). Place in each of two cylinders 1 cc. of the reagent and 40 ccs. of water; then add to one 5 g. of crystallized sodium acetate and to the other 1 cc. of a normal solution of the substance to be tested, and compare the colors.

Lunge & Lwoff's test for nitric in the presence of nitrous acid; a colorimetric determination by means of a solution of 0.2 g. brucine in 100 ccs. of pure concentrated sulphuric acid. Mix 1 cc. of normal solution (10 ccs. of a solution of 0.0721 g. KNO_3 in 100 ccs. water are diluted to 100 ccs. with concentrated sulphuric acid), and 1 cc. of the solution to be tested, each with 1 cc. of brucine solution; dilute each sample to 50 ccs. with concentrated sulphuric acid, heat to 70°—80° C., cool after the solutions have acquired a sulphur-yellow color, and compare the intensities of the colors in suitable glass cylinders.

The above normal solution contains per cc. $\frac{1}{100}$ mg. nitrogen from nitrates.

* Continued from Vol. 14, p. 273.

Lustgarten's reactions for iodoform.

1. Upon warming 1—2 drops of an iodoform solution with a little phenol and caustic potash, a red substance is formed, dissolving in alcohol to a red solution.

2. Dissolve 0.1 g. resorcin and a piece of sodium in 5 ccs. alcohol. 5 drops of the resulting green solution are mixed in a test tube with the ethereal iodoform solution, and the ether carefully evaporated. A cherry-red color results, which is destroyed by acids but restored by alkalies.

Lustgarten's reaction for naphthol. See *Wolff's* reaction.

Lux's test for fatty oils in mineral oils. In a paraffin bath kept at 200—210° C., heat for 15 minutes two samples of the oil contained in test-tubes, to one of which has been added some caustic soda, to the other some metallic sodium. Even if the specimen contains only 2 p. c. of fatty oil, one or the other sample, but generally both, will form a stiff jelly.

Lyon's mixture for shaking out strychnine and brucine consists of 3 volumes of ether and 1 volume of a mixture of 88 ccs. chloroform, 12 ccs. alcohol and 2 ccs. ammonia.

MacLagan's cocaine test. 50 ccs. of an approximately 0.1 p. c. solution of a cocaine salt are treated with 2—3 drops of ammonia, and the walls of the glass vessel rubbed vigorously with a glass rod. Pure cocaine separates out in crystals; a milky turbidity indicates the presence of amorphous alkaloids (isatropylcocaine).

Maisch's test for curcuma. See *Houvier's* test.

Mandelin's reagent for alkaloids is a solution of 1 g. ammonium vanadate in 200 ccs. concentrated sulphuric acid. This reagent yields brown, red, or green colorations with alkaloids.

Mangini's reagent for alkaloids is obtained by treating 3 parts of potassium iodide and 16 parts of bismuth iodide with 3 parts of hydrochloric acid. A brown precipitate is formed with solutions of alkaloids; compare *Dragendorff's* reagent. The above reagent has the advantage over the latter of not becoming turbid when mixed with water.

Mann's reagent for water in alcohol, air, etc. 1 p. of molybdic acid is triturated with 2 p. of citric acid, the mixture fused, and when cool dissolved in water; filter-paper is then saturated with this solution and dried at 100° C. This blue paper becomes white through the absorption of water when exposed to moist air, or when dipped into alcohol or ether containing water.

Maréchal's test for coloring matter from the bile. Add 2—3 drops of tincture of iodine to an acid or neutral urine; in the presence of biliary pigments a chrome-green color appears. See *Smith*.

Marmé's reagent for alkaloids (potassium cadmium iodide). Add to a boiling concentrated solution of potassium iodide (4 p. KI in 12 p. water) cadmium iodide to saturation (2 p.), and mix this with a like volume of a cold saturated solution of potassium iodide. The concentrated solution is permanent; the weak one decomposes upon standing. With solutions of alkaloids, this reagent yields white to yellowish precipitates. (*Dragendorff*, Ermittelung der Gifte; *Hager*, Pharm. Praxis.)

Known also as *Lepage's* reagent.

Marque's test for sparteine. Sparteine sulphate warmed with one-third its weight of chromic acid, yields a green color through reduction of the latter; at the same time the penetrating odor of cicutin is developed.

Marsh's test for arsenic. By reduction with pure zinc and dilute sulphuric acid, arsenious hydride (arsine) is produced from solutions of arsenates or arsenites which must be free from oxidizing agents. If the arsine is passed through a red-hot glass tube, metallic arsenic is deposited on the cold portion of the tube beyond. Upon igniting the arsine and placing a cold porcelain plate into the flame, metallic arsenic is deposited upon the plate. (Concerning further tests, distinction from antimony, and precautions to be observed in manipulation, see *Fresenius*, Qualitative Analysis, and *Hager*, Pharm. Praxis.)

Davy's modification of the above consists in the use of sodium amalgam instead of zinc and sulphuric acid for the reduction of the arsenic compounds.

In *Himmelmann's* modification, zinc, iron, and concentrated ammonium chloride solution are used to accomplish this result.

Fleitmann's modification employs zinc and caustic soda or potash to liberate the arsine.

Masin's solution is a solution of potassium mercuric iodide of almost the same composition as *Mayer's* reagent (q. v.).

Masset's test for biliary coloring matter. See *Gmelin's* reaction.

Maugin's reagent for the microscopical examination of textile fabrics is an ammoniacal oxychloride of ruthenium (ruthenium red).

Maumené's reaction for distinguishing oils. Observe the rise in temperature which results when mixing the oil with concentrated sulphuric acid. Drying oils evolve much more heat than non-drying ones.

Maumené's test for glucose. Saturate woolen threads with a 33 p. c. solution of zinc chloride and dry. When moistened with a glucose solution and heated to 130°, the threads are colored brown or black.

Mayer's reagent for alkaloids (*Mayer's* solution, potassium mercuric iodide). 13.546 g. mercuric chloride and 49.8 g. potassium iodide are dissolved in water and diluted to 1 liter. With most alkaloids in weakly acid solutions this reagent yields whitish precipitates, which property permits its use in quantitative determinations. (*Dragendorff*, Analyse der Pflanzen; *Dragendorff*, Werthbestimmung; *Hager*, Pharm. Praxis.)

This reagent is also known under the names: *Delf's* reagent, *Planta's* reagent, *Tauret's* reagent, *Winkler's* reagent.

Méhn's reagent for albumin is a mixture of 1 p. phenol, 1 p. acetic acid and 2 p. of 90 p. c. alcohol; this solution precipitates albumen in the presence of nitric acid or sodium sulphate. The best method of proceedure is to add an equal volume of a saturated solution of Glauber's salt to the urine to be tested.

Melassez's solution for the preparation of *Teichmann's* hæmin crystals is a solution of the same specific gravity as blood (1.050—1.057); it consists of 3.75 p. mucilage of acacia, 1.875 p. sodium sulphate, 1.03 p. sodium chloride and 100 p. water.

Merget's test for the presence of mercury. A piece of gold-foil upon which metallic mercury has been precipitated (e. g., by means of stannous chloride from urine containing corrosive sublimate)

is wrapped up first in tissue paper, and then in filter paper which has been saturated with an ammoniacal silver solution and subsequently dried. The whole is weighted down; in the presence of mercury, a brown color will be produced in a few minutes on the inside of the filter paper.

To prove the presence of mercury vapor, draw lines on filter paper by means of a glass rod moistened with an ammoniacal silver nitrate solution. These are darkened by mercury vapor.

Merget's test for moistnre depends upon the use of salts which, like palladous chloride and mercurous chloride, show a different color when moist than when dry.

Compare *Mann's* reagent.

Merz's test for olive oil. Of two samples of olive oil, one is heated to 250° C. In the case of pure olive oil, the heated sample will appear much paler than the other.

Mesnard's reagent for identifying albumens: glycerine containing sugar, and fumes from concentrated hydrochloric acid.

Messinger's test for acetone. Solutions containing acetone yield iodoform when treated with iodine and caustic soda. For quantitative estimations, either the iodoform is weighed (*Krämer*), or the excess of iodine found by titration (*Messinger*).

Meyer's thiophene reaction. Thiophene and its homologues are colored blue by a solution of isatin in concentrated sulphuric acid.

Meyer's reaction for cod liver oil. Pure cod liver oil when shaken with 1/10 its volume of a mixture of nitric and sulphuric acid (1:1), is first colored rose-red, then lemon-yellow. Other fish oils either do not show such a distinct transition, or give a brownish-yellow coloration.

Metzger's reaction for cocaine. Dilute aqueous solutions of cocaine salt after acidulating with hydrochloric acid yield orange-yellow precipitates with potassium chromate.

Millian's reaction for identifying linseed oil in olive oil. 40.0 g. olive oil are mixed with 60.0 g. of a 20 p. c. solution of potassium hydroxide in 70 p. c. alcohol, and heated on the water-bath until the alcohol has evaporated. The resulting soap is dissolved in warm water, the fatty acids are separated out by the addition of dilute hydrochloric acid, and these dissolved in 20 ccs. of 90 p. c. alcohol. If to this solution, after heating to 90°, 2 ccs. of a 3 p. c. alcoholic silver nitrate solution are added, a brown color will result if linseed oil was present in the olive oil.

Millian's modification of *Bechi's* test (q. v.).

Millon's reagent for albumens and phenols is prepared by dissolving mercury in an equal weight of fuming nitric acid (sp. gr. 1.4), first in the cold, later on by the application of a moderate heat, and then diluting the solution so obtained with two volumes of water. The reagent contains mercurous and mercuric nitrates as well as free nitric and nitrous acids. Albumens yield a brick-red precipitate with this reagent, especially after warming. Similar reactions are given by all compounds of the aromatic series that contain a single hydroxyl or methyoxyl group; a second hydroxyl or a nitro group in the ring change the reaction (*Nickel*). Thus resorcin yields a yellow, hydroquinone an orange, pyrogallol a brown coloration. Tannin and guaiacol are colored red, eugenol and vanillin violet.

Kintschgen-Gintl's modification of *Millon's* reagent: A solution of mercuric nitrate is treated with a little potassium nitrite, and the necessary quantity of nitric acid added just before using. The potassium nitrite must be freed from any carbonate it may contain (by passing nitrous acid through its solution).

Compare *Gallois'*, *Hoffmann's* and *Plugge's* reagent.

Millon's reagent for salicylic acid is a 10 p. c. solution of mercuric nitrate in dilute nitric acid; this yields an intensely red coloration with salicylic acid.

Mitscherlich's reaction for phosphorus depends upon the luminosity of phosphorus vapor when phosphorus is distilled in the dark with a current of steam.

Mohr's reaction for free acids, especially for HCl (in the gastric juice) is a mixture of 20 ccs. of a 10 p. c. potassium sulphocyanate solution with 5 ccs. of a 5 p. c. solution of ferric acetate. Hydrochloric acid with this reagent produces a cherry-red color with a brownish tinge; more of the acid causes a chestnut-brown coloration. This test also goes by the name of *Rheoch's* test.

Mohr's test for glucose. See *Moore's* test.

Molisch's reaction for carbohydrates. Shake ½—1 cc. of the solution to be tested with 2 drops of a 15—20 p. c. alcoholic solution of *α*-naphthol or thymol. Upon the addition of a like volume of concentrated sulphuric acid, the solution is colored violet (furfurol reaction) in the presence of carbohydrates (and several other substances). Upon the addition of water, a bluish-violet precipitate is produced, which is soluble to a yellow solution in alcohol, ether or potash lye.

Moore's test for glucose and sugar in the urine. Upon heating glucose solutions or diabetic urine with caustic potash, a brown coloration results; after acidifying with some acid, the odor of caramel appears. This test is also known as *Mohr's* or *Pelouze's* test. Compare also *Heller's* test.

Mueller's test for cystin. Upon dissolving cystin (prepared from the sediment of urine) in caustic potash, diluting this solution with water, and adding sodium nitroferricyanide, a purple-violet color is produced.

Mueller's solution for hardening microscopic preparations is a solution of 20 g. potassium bichromate and 10 g. sodium sulphate in 1 liter of water.

Mulder's test for glucose. Upon heating diabetic urine or any solution of glucose with a solution of indigo in sulphuric acid, and then carefully neutralizing with sodium carbonate, the color changes into green, then red and finally yellow, due to reduction of the indigo. Upon exposure to the air, the blue color is restored.

According to *Vogl's* modification, litmus is used instead of indigo; *Neumann-Wender's* test (q. v.) employs methylene blue.

Mulder's xanthoprotein reaction. Upon heating any albuminous substance with concentrated nitric acid, it is partially or completely dissolved to a yellow solution. In the case of albumoses and peptones this color is produced even in the cold. Upon supersaturating with ammonia or with fixed alkalies the color changes to orange-yellow.

Musculus' reagent for urea (ferment-paper). Decomposing urine is filtered, the filter washed, colored with curcuma, and preserved as test-paper. When added to solutions of urea, the attached

ferment causes a splitting up of the urea, and the resulting ammonium carbonate causes the curcuma coloring matter to turn brown.

Neelsen's carbolfuchsin for identifying tubercle bacilli in the sputum is prepared by adding a concentrated alcoholic fuchsin solution to a 5 p. c. aqueous solution of carbolic acid (5 g. of crystallized carbolic acid are dissolved in 100 cc. of water and 1 g. fuchsin, dissolved in 10 g. alcohol, is added). *Erlich's* and *Ziel's* carbolfuchsin solutions have similar compositions.

Nessler's reagent for aldehyde. Aldehydes when treated with *Nessler's* ammonia reagent (q. s.) or with a solution of potassium mercuric iodide and baryta water, yield brownish-black precipitates, which differ from the precipitates caused by the same reagents in ammonia solutions, by being insoluble in potassium cyanide.

Nessler's reagent for ammonium salts is an alkaline solution of mercuric chloride and potassium iodide. With ammonia as well as with ammonium salts it causes a yellow to reddish-brown coloration or precipitate. The reagent is prepared according to various formulae, of which the following are typical:

I. 50 g. potassium iodide are dissolved in 50 cc. hot water and concentrated mercuric chloride solution (20—25 g. mercuric chloride) added until a permanent precipitate appears. After filtering, 150 g. potassium hydroxide dissolved in 300 ccs. water are added, and the whole diluted to one liter. 5 cc. more of the mercuric chloride solution is now added, the resulting precipitate allowed to settle, and the clear liquid decanted (*Kubel*).

II. Dissolve 2 g. potassium iodide in 5 g. water; add 4 g. of mercuric chloride, or enough so that upon warming a little of the precipitate remains undissolved. After cooling, dilute with 20 g. water, filter, and add 30 ccs. of a solution of 1 p. KOH in 2 p. of water. (*Ludwig*, Medicin. Chemie.)

Nessler's reagent for wine pigments is a solution of 7 p. alum and 10 p. sodium acetate in 100 p. water.

Neubauer's test for biliary acids is a modification of *Pettenkofer's* reaction. A few drops of urine are evaporated to dryness on the water-bath, a drop of sugar solution (1:500) and a drop of concentrated sulphuric acid are added, and the whole heated on the water-bath. If biliary acids are present, a violet-red color appears at the edge.

Neubauer's test for chloroform in the urine. A current of air is passed first through the urine in question, then through a red-hot porcelain tube, and finally through a solution of silver nitrate. If chloroform was present in the urine, a precipitate of silver chloride is formed.

Neumann-Wender's alkaloid reagent is furfurol-sulphuric acid (5 drops of furfurol in 10 ccs. pure concentrated sulphuric acid). See *Weppen's* veratrin reaction.

Neumann-Wender's test for grape sugar in the urine. 1 cc. of diluted urine (1 p. urine to 10 p. water) is treated with 1 cc. each of methylene blue solution (1:1000) and normal KOH solution and boiled for a minute. If the solution is hereby completely decolorized, sugar was present in the urine. Compare *Mulder's* test.

Nickel's test for mineral acids in the presence of organic acids depends upon the fact that only the presence of the former is wood stained by phloroglucin. If 0.5 p. c. of hydrochloric acid is present in vinegar, upon adding phloroglucin and a piece of pine wood or wood-pulp paper, this latter is distinctly stained upon boiling the solution.

Nickel's color reactions of carbon compounds. Compare Zeitsch. f. analy. Chem. 1889, p. 244; also see under *Millon's* reagent.

Nivière and **Hubert's** test for fluorine in wine. Render the wine slightly alkaline with ammonium carbonate and, by means of calcium chloride, precipitate any fluorides present as calcium fluoride. After heating the incinerated residues with silicic and sulphuric acids, fluorine is identified in the usual manner as silicium fluoride.

Noll's reagent is a solution of sodium hypochlorite.

Nylander's reagent for glucose. 2 g. bismuth subnitrate and 4 g. Rochelle salts are dissolved in 100 g. of an 8 p. c. solution of caustic soda. To 10 p. of the solution to be tested (diabetic urine) add 1 p. of reagent, and boil. A darkening of the liquid due to reduction of the bismuth salt indicates glucose. This solution is also known as *Almén's* solution.

Obermeier's reaction for indican. The urine is treated with lead acetate, the resulting precipitate filtered out, and the clear filtrate shaken with a ½ p. c. solution of ferric chloride in fuming hydrochloric acid (sp. gr. 1.19). Upon extracting with chloroform, this is colored blue if indican was present.

Olivier's test papers for identifying albumen and sugar in the urine, are filter papers saturated with well-known reagents for albumen and sugar.

Test-papers for albumen: picric and citric acids; sodium tungstate and citric acid; potassium mercuric iodide and citric acid; papers separately saturated with potassium ferrocyanide and citric acid.

Test-papers for sugar: indigo-carmine and sodium carbonate, separate.

These papers also go by the name of *Geissler's* test-papers. For particulars see Ph. Centralh., 24, p. 431; 25, p. 3.

Ost's copper solution for estimating sugar, contains 23.5 g. cryst. cupric sulphate, 250.0 g. sodium carbonate, and 100.0 g. potassium bicarbonate per litre.

Compare *Soldaini's* solution.

Otto's reaction for picrotoxin. The yellow solution of the alkaloid in concentrated sulphuric acid shows a reddish-brown color at the zone of contact with a drop of potassium bichromate solution; upon mixing, the solution is colored green.

Otto's morphine reaction. With a solution of hydrochloric acid, ferric chloride, and potassium ferricyanide, morphine solutions yield precipitates of Prussian blue.

Otto's modification of *Fehling's* solution (q. v.) is a solution of 1 p. copper sulphate and 3 p. tartaric acid, to which enough caustic soda solution is added to just produce a clear solution.

Pacini's solutions, Nos. I and II, are preservative solutions for microscopic sections, and have the following composition:

I.		II.	
Mercuric chloride,	1 p.	Mercuric chloride,	1 p.
Sodium chloride,	2 p.	Acetic acid,	2 p.
Glycerin (25° Bé),	13 p.	Glycerin (25° Bé),	43 p.
Water,	113 p.	Water,	275 p.

Pagel's test for phosphorous acid in phosphoric acid. Phosphorous acid, upon warming

with mercuric chloride solution, gives a white precipitate of mercurous chloride.

Panum's test for albumen. Any liquid (as urine) containing albumen, yields a coagulum when boiled with a like volume of a saturated solution of sodium sulphate or sodium chloride.

Paul's reaction for biliary coloring matter. If normal urine (or urine containing sugar or albumen) is colored with methylviolet, the color remains unchanged; if, however, the urine contains biliary pigments, the violet color is changed to blood-red.

Papassyli's reaction for cane sugar. See *Reich's* reaction.

Pavi's solution for estimating glucose. 4.158 g. crystallized copper sulphate, 20.4 g. Rochelle salts, and 20.4 g. caustic potash are dissolved in water; 300 ccs. ammonia water (sp. gr. 0.88) are added, and the whole diluted to one litre. 10.0 ccs. of this solution represent 0.005 g. glucose. When all the cupric salt has been reduced to cuprous, the solntion is colorless.

Compare *Fehling's* solution.

Pellagri's morphine reaction. Dissolve morphine in concentrated hydrochloric acid, add a few drops of concentrated sulphuric acid, and heat on the water-bath. A distinct purple coloration results. Now add some more hydrochloric acid, then sodium bicarbonate to a neutral reaction, and finally an alcoholic solution of iodine; the liquid is colored a deep chrome-green.

Pellet's solution for estimating glucose. 68.7 g. copper sulphate, 200 g. sodium chloride, 100 g. anhydrous sodium carbonate, and 6.87 g. ammonium chloride are dissolved in hot water and diluted with water to 1 litre. 10 ccs. of this solution are reduced by 0.05 g. glucose.

Compare *Fehling's* solution.

Pelouze's test. Same as *Moore's* test.

Penzoldt's test for acetone in the urine. A few crystals of ortho-nitrobenzaldehyde are dissolved in water and added to the distillate from urine, which is then rendered alkaline with caustic soda. In the presence of acetone the mixture becomes yellow, then green, and after several minutes indigo separates out.

Penzoldt's test for sugar in the urine, by means of *Ehrlich's* reagent. The urine is rendered strongly alkaline, and treated with a solution of diazobenzolsulphonic acid (1:60); at the same time a control test is made using normal urine. The latter is colored yellowish-red by the reagent; diabetic urine soon becomes dark red and opaque.

Penzoldt's test for naphthalene in urine. If 1 cc. of concentrated sulphuric acid is added to a trace of urine containing naphthalene; the urine floating on top of the acid will be colored dark green. Upon standing, the acid will assume the same color.

Perenyi's solution for hardening microscopic preparations consists of 4 volumes of 10 p. c. nitric acid, 3 vol. of alcohol, and 3 vol. of a 0.5 p. c. solution of chromic acid.

Perrot's reagent for ethereal oils is a solution of dimethylanilinviolet in glacial acetic acid and dilute alcohol. With many ethers, aldehydes, phenols, etc., this reagent gives characteristic colorations, but does not react with fatty oils or hydrocarbons. On this account this reagent can be employed to detect many adulterations of ethereal oils.

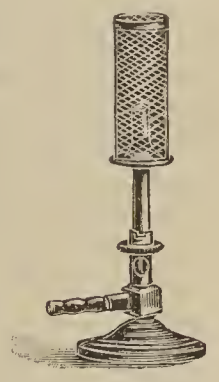
(To be continued.)

MONTHLY REVIEW.

Pharmaceutical Technique.

Protector for Bunsen Burner.

The organic chemist frequently has occasion to dissolve small quantities of substance in ether, alcohol, benzene etc. On account of the inflammability of these solvents heating with the direct flame is excluded and the waterbath has to be resorted to with loss of time. In order to make possible the direct application of heat with safety the following cap has been constructed.



Similar to Davy's safety lamp a cylinder of fine gauze is made and held together by means of a metal ring. The lower end of this cylinder is closed by a metal floor which is bent trumpet-shaped like the mouth piece of the blow-pipes. It is furnished with several slits so that it will fit burners with tubes of different diameters. The upper end of the cylinder is covered with a round piece of the same gauze.

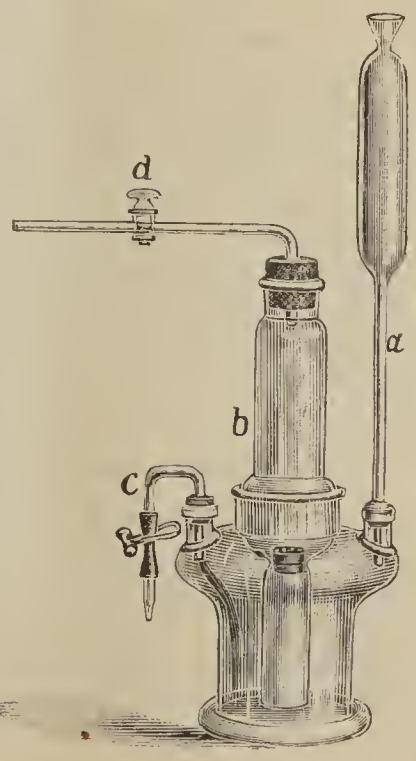
With the aid of this protective cap it is possible to heat ethereal or alcoholic liquids directly without danger of ignition. This apparatus as well as the gas generator described below are made by Max Kaehler & Martini of Berlin.

Barge's Apparatus for the Development of Gases.

It is generally known that many apparatus for the generation of gases are unsatisfactory because after they have been in use a short time the acid becomes saturated with the lye resulting from the reaction. The reagents are, therefore, not utilized to the best advantage.

In the new gas generator according to Barge this evil is avoided. The material, e. g. calcium carbonate and hydrochloric acid are completely consumed without a contamination of the unconsumed acid by the resulting calcium chloride solution.

The apparatus, illustrated by the accompanying cut, consists of a thrice tubulated supply flask. Into the large middle tubule there fits a large glass-ground cylinder *b* which extends nearly to the bottom of the supply flask. This cylinder is charged with the material, $CaCO_3$, FeS, Zn etc., necessary for the generation of the desired gas. This material is supported at a height of the middle tubule by a rubber stopper with several perforations, which is fastened in an opening, about 3—4 mm. in diameter, of the large cylinder.



One of the side tubules supports a pressure tube with bulb and funnel. Into the other is inserted a bent tube *c* which acts as a siphon, one arm of which reaches to the bottom of the reservoir whereas to the other arm is attached a piece of rubber tubing closed by means of a pinch-cock. The mouth of cylinder *b* is provided with a perforated rubber stopper into which is inserted a glass tube with stopcock. The generation of the gas is regulated by opening and closing this stopcock.

In order to place the apparatus in working order cylinder *b* is filled with the necessary material, the cock inserted and the stopcock opened. Acid is then poured into *a* until it covers the opening in cylinder *b* thereby starting the generation of gas. The stopcock is closed and more acid added until about one-fourth of the cylindrical part of *a* is filled.

Gas, e. g. CO_2, can be had by simply opening stopcoek *d*. The calcium chloride, resulting from the action of hydrochloric acid on calcium carbonate, being specifieally heavy sinks to the bottom of the reservoir. Fresh acid enters from above through the small opening without coming in contact with the reserve acid. In this way all of the acid ean be utilized. If in the course of time the apparatus has been filled with lye it can be drawn off through *c*. In an experiment, in which the apparatus was charged with marble and hydrochloric acid, 74 p. c. of the acid had been utilized. The apparatus is easily charged and cleaned and in its parts can easily be transported.

Chemistry.

Guaiac Resin.

O. Doebner has made a series of interesting reports under the following headings:

1. Ueber das Guajakharz, with E. Liecker;
2. Versuche zur Synthese der Säuren des Guajakharzes;
3. Ueber das Guajakblau.

The interested reader will have to be referred to the original, since these papers are not readily abstracted.

[Arch. d. Pharm. 234, p. 590.]

On the chemistry of Dammar Resin.

Tschirch defines dammar as a resin derived from species of *Dipterocarpeæ*, *Coniferæ* and *Burseraceæ*, principally from the species of *Hopea*, *Vatica* and *Dammara*.

The article examined by Glimman in Tschirch's laboratory was a commercial variety from Batavia and is supposed to be derived from a member of the Nat. Ord. *Dipterocarpeae*. It yielded dammarolic acid, $C_{54}H_{77}O_3(OH)(COOH)_2$; an α-dammar-resene, soluble in alcohol; and β-dammar-resene, insoluble in alcohol, but soluble in chloroform. [Arch. d. Pharm., 234, p. 585.]

A New Class of Derivatives of Albumens.

F. Blum has observed than when a few drops of formol are added to a clear, filtered solution of egg-albumen, the latter looses its property to coagulate when heated. If sueh a solution is evaporated, an albumen results which is readily soluble in water and is precipitated unchanged from its aqueous solution by alcohol and acetone, i. e. it retains its solubility. Serum albumen behaves like egg-albumen. The author believes that these substances constitute a new class of albumens resulting from the addition of a methylene group to the albumen molecule. He suggests the name protogen for these compounds.

[Ber. 29, Ref., p. 914; from Z. physiol. Chem. 22, p. 127.]

Oxyphenacetine salicylate.

According to the patented process of Meister Lucius & Bruening of Hoechst a. M. this compound is prepared by the action of sodium salicylate or its substitute on bromphenacetine:

$$C_6H_4\begin{cases}NH.COCH_3\\O.C_2H_4Br\end{cases} + C_6H_4\begin{cases}OH\\CO_2Na\end{cases} =$$

$$C_6H_4\begin{cases}NH.COCH_3\\O.C_2H_4.CO_2.C_6H_4OH\end{cases} + NaBr.$$

Oxyphenacetine salicylate erystallizes from alcohol in laminae of a satiny lustre melting at 132—134°. It is to be used medicinally. It is claimed that the disturbing therapeutic effects of its components, salicylic acid and oxyphenacetine, are not shown.

[Ber. 29, Ref., p. 933.]

Condensation Products of Tannins and Formic Aldehyde.

The condensation product of tannic acid with formic aldehyde has been introduced as a remedy by E. Merck of Darmstadt. The same firm has prepared condensation products of formic aldehyde with the tannins of the following drugs: myrobalanen, quebracho wood, rhatany, oakbark, hemlockbark, walnutbark and catechu. The condensation products are prepared by dissolving the respective tannins in water and adding a slight excess of formic aldehyde solution and the requisite amount of hydrochloric acid or some other condensing agent. The resulting precipitate is filtered, washed and dried at medium temperature. In place of the isolated tannins the purified extracts of the drugs can be used. [Ber. 29, Ref. p. 932.]

Chloral-Acetophenonoxime.

This new remedy, $\begin{matrix}C_6H_5\\CH_3\end{matrix}>C=NO.CHOHCCl_3$, patented by A. C. Jensen, is said to be devoid of the detrimental effects of chloral hydrate and acetophenone, and can therefore be used as a specific against convulsions, such as epilepsy, eclempsia, and tetanus.

The compound is best obtained by bringing together molecular quantities of chloral and acetophenonoxime in benzene and at a low temperature. It crystallizes in hard, colorless prisms, melting at 81°. It is readily soluble in alcohol and ether, more sparingly in benzene and petroleum ether. Acids and alkalies split it into its components. The isomeric oxime,

$$C_6H_5—\underset{\|}{C}—CH_2CHOHCCl_3,$$
$$NOH$$

described by Koenigs and Wagstaffe, resp. Wislicenus, is said to have entirely different physiological properties. [Pharm. Centrh. 37, p. 816.]

A New Method for the Volumetric Estimation of Iodine in Iodides.

E. Riegler proposes the following method: The iodine is eliberated by means of iodic acid and removed with the aid of petroleum ether. The excess of iodic acid is then estimated with $\frac{N}{10}$ sodium thiosulphate solution,

Iodic acid eliberates the iodine according to the following equation:—$6HIO_3+5NaI=5NaIO_3+3H_2O+6I$. $\frac{N}{10}$ iodic acid solution (17.6 g. in 1 l.) having been used the excess is titrated with $\frac{N}{10}$ thiosulphate solution standardized according to the following equation: $6Na_2S_2O_3+6HIO_3=3Na_2S_4O_6+5NaIO_3+NaI+3H_2O$. 17 g. iodic acid correspond to 24.8 g. thiosulphate. Starch solution serves as indicator. The solution of the iodide should not be of more than one percent strength. The liberation of the iodine is effected in a separating funnel and the mixture shaken twice with petroleum ether. The iodic acid solution is prepared by dissolving 17.6 g. of pure, crystallized iodic acid dried over sulphuric acid in sufficient water to make a liter. The solution can be kept for considerable length of time without change and the results are exact.

[Ber. 29, Rep., p. 918; from Zeitsch. f. anal. Chem. 35, p. 305.]

Erythrophlein.

This substance is of special interest because it exerts the so-called "digitalin" action on the living organism. It derives its name from its supposed source, the west African tree, *Erithrophleum guineense*, Nat. Ord. *Leguminosæ*, the wood of which is said not to be affected by the termites. The bark is known in German as *Sassi Rinde* or *Toli;* in English as casca or cassa bark; in French as *ecorce de Mançoire des Portugais* or *Bouvane de Floups*, and is used by the natives as arrow poison or as ordeal.

The alkaloid has been examined by several investigators, among them by Harnach about fifteen years ago. He now examined another sample of the hydrochloride supplied by E. Merck. This differed to no slight extent from the first alkaloid.

1. The salt as well as the platinum double salt constitute a fine, light yellow, amorphous powder.

2. The substance produced in cold- as well as warm-blooded animals the digitalin action only, not the picrotoxin action.

3. It was not hydrolized as readily as the former substance.

These differences are possibly due to the fact that the new material was derived from a different source. Gallois and Hardy (1876) already called attention to the fact that *E. Coumenga* contains a base which is closely related to that derived from *E. guineense*.

[Arch. d. Pharm. 234, p. 561.]

Derivatives of p-Amidophenols.

The importance of p-amidophenol as mother substance for numerous antifebric and antineuralgie substances has been emphasized by Prof. Mering. At the instigation of Prof. Doebner, Victor Wirths has introduced the radicles of dibasic acids into p-amidophenol, p anisidine and p-phenetidine. The substances obtained can but be enumerated here. For details the reader will have to consult the original.

A. 1) Phthalyl-p-amidophenol,

$$C_6H_4<\begin{matrix}OH\\N<\begin{matrix}CO\\CO\end{matrix}\end{matrix}>C_6H_4.$$

2) Succinyl-p-amidophenol,

$$C_6H_4<\begin{matrix}OH\\N<\begin{matrix}CO\\CO\end{matrix}\end{matrix}>C_2H_4.$$

3) Oxalyl-p-amidophenol,

$$C_6H_4<\begin{matrix}OH\\N<\begin{matrix}CO\\|\\CO\end{matrix}\end{matrix}$$

4) Tartronyl-di-p-amidophenol,

$$C_6H_4<\begin{matrix}OH\\NH-OC.CH(OH)\end{matrix}$$
$$C_6H_4<\begin{matrix}NH-OC.CH(OH)\\OH.\end{matrix}$$

5) Succinyl-p-anisidine,

$$C_6H_4<\begin{matrix}OCH_3\\N<\begin{matrix}CO\\CO\end{matrix}\end{matrix}>C_2H_4.$$

6) Succinyl-p-phenetidine,

$$C_6H_4<\begin{matrix}OC_2H_5\\N<\begin{matrix}CO\\CO\end{matrix}\end{matrix}>C_2H_4.$$

7) Succinyl-di-p-phenetidine,

$$C_6H_4<\begin{matrix}OC_2H_5\\NH-CO\end{matrix}>C_2H_4$$
$$C_6H_4<\begin{matrix}NH-CO\\OC_2H_5.\end{matrix}$$

8) Oxalyl-p-anisidine,

$$C_6H_4<\begin{matrix}OCH_3\\N<\begin{matrix}CO\\|\\CO.\end{matrix}\end{matrix}$$

9) Oxal-di-p-anisidine,

$$C_6H_4<\begin{matrix}OCH_3\\NH-CO\end{matrix}$$
$$C_6H_4<\begin{matrix}NH-CO\\OCH_3.\end{matrix}$$

10) Oxalyl-p-phenetidine,

$$C_6H_4<\begin{matrix}OC_2H_5\\N<\begin{matrix}CO\\|\\CO.\end{matrix}\end{matrix}$$

11) Tartronyl-di-p-anisidine,

$$C_6H_4<\begin{matrix}OCH_3\\NH-OC.CH(OH)\end{matrix}$$
$$C_6H_4<\begin{matrix}NH-OC.CH(OH)\\OCH_3.\end{matrix}$$

12) Tartronyl-di-p-phenetidine,

$$C_6H_4<\begin{matrix}OC_2H_5\\NH-OC.CH(OH)\end{matrix}$$
$$C_6H_4<\begin{matrix}NH-OC.CH(OH)\\OC_2H_5.\end{matrix}$$

B. 1) Phthalyl-p-amidophenol-benzoate,

$$C_6H_4<\begin{matrix}OOC.C_6H_5\\N<\begin{matrix}CO\\CO\end{matrix}\end{matrix}>C_6H_4.$$

2) Phthalyl-p-amidophenol-butyrate,

$$C_6H_4<\begin{matrix}OOC.C_3H_7\\R'\ *\end{matrix}$$

3) Phthalyl-p-amidophenol-propionate,

$$C_6H_4<\begin{matrix}OOC.C_2H_5\\R'\end{matrix}$$

4) Phthalyl-p-amidophenol-acetate,

$$C_6H_4<\begin{matrix}OOC.C_2H_3\\R'\end{matrix}$$

5) Succinyl-p-amidophenol-benzoate,

$$C_6H_4<\begin{matrix}OOCC_6H_5\\N<\begin{matrix}CO\\CO\end{matrix}\end{matrix}>C_2H_4.$$

How many of these will serve their days as "new remedies" remains to be seen. Compare also the work by Wenghoeffer, vol. 14, p. 186.

[Arch. d. Pharm. 224, p. 620.]

[* $R'=-N<\begin{matrix}CO\\CO\end{matrix}>C_6H_4$.]

Practical Pharmacy.

A Paraffin-Naphthalene Emulsion.

One kg. of naphthalene is dissolved in 10 kg. hot paraffin oil and this solution is emulsified by thorough shaking with a solution of 33 kg. of soft soap in 33 kg. water at a temperature of about 85°. This emulsion can be diluted without the separation of paraffin oil. As an insecticide 15 kg. of this emulsion are diluted with 1000 l. water. Compare also vol. 14, p. 188.

[Ber. 29, Ref., p. 924.]

How to Keep Lemon Oil.

As is well known, lemon oil is one of the essential oils which readily deteriorate when improperly kept. Some time ago (Report, April 1895, pp. 35) we experimented with a view to ascertain the best mode of keeping lemon oil. Common, not dehydrated oil, as well as one deprived of water by treating it with anhydrous sodium sulfate, was kept in well closed vials, partly only half filled; part of the bottles were kept some time removed from light, and others some time exposed to light.

The result of these experiments was then recorded in the following words:

1. The dehydration of the oil by means of sodium sulfate is not only of no use, but rather detrimental to the oil.

2. The greatest possible exclusion of air from the vials is necessary for the unimpaired preservation of the oil.

3. The influence of light is injurious to lemon oil, but it is insignificant compared to that of air.

Lemon oil, therefore, should be kept in carefully closed vials, filled up to the neck and in dark and cool rooms. [Ber. Schimmel & Co., Oct. '96.]

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Reviews.

In Nacht und Eis. Die Norwegische Polarexpedition 1893 bis 1896. Von Fridtjof Nansen. Mit einem Beitrag von Capitän Otto Sverdrup. Deutsche Originalausgabe. Zwei Bände. Verlag von F. A. Brockhaus in Leipzig. 1896. $5.75. In 36 Lieferungen @ 16 Cents.

Die in der wissenschaftlichen und nautischen Welt zu grosser Berühmtheit gelangte dreijährige Nordpolreise des Norwegers Nansen hat auch in den gebildeten Kreisen aller Länder ein so grosses und allgemeines Interesse gefunden, wie keine andere der zahlreichen früheren Forschungsreisen in die Polarmeere. Gestützt auf die in denselben gewonnenen Erfahrungen, im Besitze gründlicher Sach- und nautischen Kenntnisse und eines guten praktischen Sinnes ist es Nansen gelungen, die früheren Schwierigkeiten und die Natur der grossen Strömungen der Polarmeere richtig zu erkennen und mittelst seines für die gewaltige Eispressung der langen Polarwinter rationell construirten Schiffes "Fram" dem Nordpole näher zu kommen, als das bisher gelungen war. Die von Nansen erkannten und der Geographischen Gesellschaft in London im Januar 1892 vorgetragenen Schlüsse über die Strömungen in den hohen Polarmeeren haben sich als zutreffend erwiesen und haben dem kühnen Forscher ein Vordringen bis kaum 50 Meilen zum Pole, ein dreimaliges Ueberwintern in der furchtbaren Eiseinöde und schliesslich eine Rückkehr des Schiffes zu den heimathlichen Gestaden ermöglicht.

Diese in der Polarforschung unerreichte Grossthat hat daher Nansen zu einem der gefeiertsten Reisenden und Forscher der Jetzzeit gemacht. Nach der ihm bei seiner Rückkehr im August d. J. in seiner Heimath dargebrachten glänzenden Begrüssung, entzieht sich Nansen vorerst allen weiteren Ovationen und Einladungen, um die Wissbegierde der Mitwelt durch eine eingehende Darstellung der Erlebnisse und Erfahrungen, sowie der wissenschaftlichen und praktischen Erlebnisse seiner dreijährigen Polarreise zu befriedigen.

Die erste Lieferung der deutschen Originalausgabe dieses mit höchster Spannung erwarteten Werkes ist soeben in dem rühmlich bekannten Verlage von F. A. Brockhaus in Leipzig erschienen. Bei dem allgemeinen Interesse für Nansen's Polarexpedition und für seine Beschreibung derselben dürfte diese erste Lieferung wohl in allen deutschen Buchhandlungen der Welt zur Zeit ausliegen und habhaft sein. Einer Beschreibung und besonderen Empfehlung bedarf das Werk nicht. Sind die Erwartungen an dasselbe wohl auch hochgehende, so dürfte es dieselben inhaltlich wie auch illustrativ mehr als erfüllen und auf seinem Gebiete eines der hervorragendsten Werke der neueren Litteratur werden. *Fr. H.*

The Development of the Periodic Law. By Dr. F. P. Venable, Professor in the University of North Carolina. One vol., pp. viii, 321. Chemical Publishing Co., Easton, Pa. 1896. $2.50.

Ever since man began to speculate about nature he has been tempted to refer to a prime matter or "Urstoff" the various manifestations of material nature that surround him. Water, air, and fire have been pronounced "Grundstoffe" by Thales, Anaximenes, and Heraclitus respectively during the sixth century B. C. The four elements of Aristotle or rather of Empidocles: fire, air, water, and earth were considered by the former not identical with the phenomenon, or the material objects known respectively by these names. To his mind they were but abstractions, abstract manifestations of the various combinations of the four prime qualities: warm, cold, dry, and moist of a prime matter or "Urstoff," of that which in itself is nothing yet has the capacity to be everything.

Geber's alchemistic theory of the metals involving the elements sulphur and mercury to which Basil Valentine in the 15th century added salt, in which modification it was adopted by Paracelsus and the iatrochemists was not different in essence from that of Aristotle. The difference consisted primarily in the names. This is clearly demonstrated by the otherwise remarkable fact that the two theories were held side by side by the same men for almost two thousand years.

With the discovery of a considerable number of elements during the last quarter of the last century and the first quarter of the present century this desire for a fundamental matter seems to have increased almost in a ratio with the discovery of new elements. Prout's hypothesis of 1816, that hydrogen might be considered as fundamental matter and that the other elements are but condensation products of hydrogen, attracted general attention and met with much favor, experimental facts to the contrary. A reaction from this wild dream, however, set in and when Newlands presented his system of octaves, he was ridiculed by his colleagues, and Mendelejef and Lothar Meyer shortly afterward received little or no attention. The fulfillment of a prophecy on the part of the Russian scientist accidentally emphacized the value of the periodic law and lent to it some credence in place of the skepticism that followed the failure of Prout's hypothesis.

It is of no little interest to note that at a time when other highly developed systems are being brought forth, the value of the periodic system, on which the newer ones are based, is being emphacized. The value of the periodic system as a didactic basis for the study of chemistry has put into the shadow the incidental role this system has placed in the prophecy and discovery of new elements. The periodic law: the properties of the elements are functions of their atomic weights, is the all important fact; the systematic pigeonholing of these elements is altogether of secondary importance.

A better service could not have been done the study of chemical philosophy than the production of a sketch of the development of this periodic law. Whether this law in its present form will stand or not is rather immaterial. What might be called the material development of chemistry has made its devotees only too content with the gathering of new facts and their arrangement into a system or systems. The by far weightier matter, the philosophic bearing of the results obtained has interested but few. It is to be hoped that the author's work may be crowned by assisting in the awakening of the interest in the historical and philosophic aspect of a science that is replete with interest along these lines of study.

E. K.

Lehrbuch der Oekologischen Pflanzengeographie. Eine Einführung in die Kenntniss der Pflanzenvereine von Dr. Eugenius Warming, Universitäts-Professor der Botanik und Direktor des Botanischen Gartens zu Kopenhagen. Deutsche, vom Verfasser genehmigte, durchgesehene und vermehrte Ausgabe von Dr. Emil Knoblauch, Privatdocenten der Botanik an der Universität zu Giessen. Berlin, Gebrüder Borntträger. 1896. M. 7.00.

The realm formerly assigned to plant physiology has with the development of the subject fallen into two more or less distinctly marked parts. Physiology concerns itself especially with the internal relations and processes. How the plant assimilates, how the water supply enters and is managed by the plant, how the organism responds to stimuli — these processes all present themselves as chemical or physical problems. In investigating these problems, the botanist seeks evidence that can be presented in exact units. The problems concerning the relations of plants to the outside world which present themselves more as objects for speculative consideration and yield only approximate results to experiment, fall within the field of ecological botany. As fair representatives of ecological problems there may be mentioned: the significance to the plant of the rain fall both with reference to its quantity and its frequency of appearance, the constitution and movement of the air in relation to plant life, the composition and physical characteristics of the soil as affecting the flora it supports, the relation of the change of seasons and of vertical elevation to the plant. Some German authors have included under the term "Biologie" (Weisner) an essentially similar range of subjects. The word "biology" as usually used by writers in the English language is given a much broader significance, anything pertaining to life being included (Huxley). Fortunately the word "ecology" is finding increased use in English, thus avoiding the possibility of confusion.

The book under discussion is a treatise on plant geography. The geographical distribution of plants has been treated by Grisebach, Meyen and Drude among others and always from the floristic standpoint. The objects sought have been to divide the earth's surface into natural floral areas marked by a similar floral population. Thus the distribution of any given species or group has been more or less thoroughly traced. Here systematic botany and geography have gone hand in hand. Thus far facts have been accumulated defining the parts of the world occupied by plants of various groups.

The questions arise, Why are certain species found where they are, what is the relation between the situation in question and the occurrence of the plant? To endeavor to account for the reason for this is the purpose of Warming's work. Here, plant ecology and geography work together. The author is a pioneer on this ground and his work, as he remarks, "has no prototype."

To give an adequate idea of the contents of this work here is out of the question. An introductory consideration of the ecological factors and their action on plants brings together with synoptic brevity a great amount of scattered information on the action of light, heat, moisture, precipitation, winds, the constitution of the soil and related subjects in their relation to plant life. The second section treats of living beings in their relation to the life of plants. The changes wrought by man, the part played by animals and by competing plants, by parasites of various degrees of independence are considered.

The classes of plant communities (Pflanzenvereine) follow. Plants are divided into four great primary groups according to their dependence on water and with reference to water as a substratum.

I. The *Hydrophyte* vegetation consists of plants surrounded by water or growing in a very wet soil, containing not less than 80 percent of water. II. The *Xerophyte* vegetation is at the other extreme and includes plants growing in a rocky soil or in a soil subjected to long periods of drought, water-content under 10 percent. III. The *Halophyte* vegetation is bound to a soil containing far beyond the usual amount of salts. IV. The *Mesophyte* vegetation is made up of plant communities adapted to a medium degree of moisture and the usual amount of salts in the soil. In each of the four classes occur five main types: thallophytes and mosses, herbs, dwarf bushes (*Calluna*, *Vaccinium*), shrubs and trees.

The various communities (Vereine) are then discussed with some detail. Peculiar structures aiding in adapting the plant to its surroundings, and anatomical changes wrought by external conditions find mention. There is thus accumulated in this work a wealth of scattered information of greatest service and interest to the student of outdoor botany. It is, indeed, difficult to speak in too high praise of this work.

A bibliography of about twelve pages appended to the work and cited frequently in the text adds to the value of the book. A very complete index makes ready reference possible. The mechanical part of the work is guaranteed by the name of the publishers.

This work, written originally in Danish and now translated by Dr. Knoblauch into German, should find its way into English since it would be of great value to students and others not conversant with either foreign language.

Rodney H. True.

Physikalisch-Chemische Propädeutik unter besonderer Berücksichtigung der medicinischen Wissenschaften und mit historischen und biographischen Angaben. Von Professor Dr. Med. und Phil. H. Griesbach. Erste Hälfte pp. 272, und zweite Hälfte, erste Lieferung, pp. 273—592, mit 104 Figuren. Verlag von Wilhelm Engelmann, Leipzig. 1895 und '96. M. 13.00.

The rapid growth of the various sciences has lead to an unprecedented degree of specialization in teaching as well as in investigation. The ground that was covered or mastered by a single person a century ago, to-day seems to call for a small army of specialists. Specialization on the whole, has been productive of so much good that we often fail to realize that it has any shortcomings. The mistakes that have been made by men who tried to cover too large a ground, have led us to go to specialists on almost all occasions. This has become true to a large extent even in the use of introductory text-books. To write a satisfactory text-book on physics, chem-

istry, and biology certainly is not every man's business. A book that combines the three in such a manner that the correlation of these fundamental sciences seems to open a new world to the student, certainly deserves our attention to the highest degree. If with this correlation the historic element is strongly emphacized, and the literary references are such that the student may be led to a more thorough and detailed study of the various chapters, the book accomplishes about all that can be expected from it.

The book does not presuppose any technical knowledge in any one of the three general sciences, but makes demands on a thorough general preparation such as is offered by the complete course of the German gymnasium. It is to assist the chemist, who should know of the biological application of his science to sanitary and hygienic as well as forensic problems without going into the study of medicine as such. It is also to emphacize to the medical student the importance of physico-chemical studies for a better understanding of medicine proper. Incidentally it also appeals to jurists who in their professional practice often are in need of the fundamental principles of the sciences in order to understand and appreciate the bearing of expert scientific testimony.

Inasmuch as a historical treatment assists in a better understanding, historical and biographical chapters are added. It certainly must be gratifying to all who look at the sciences from a broader than a matter of fact standpoint, that not only the history of the sciences is receiving more and more attention, but that history is introduced more and more into the study of a science.

On the whole the book appears to be on the height of modern science. The underlying principle of energy in the modern treatment of science is also made the backbone of this discourse. If the specialist can here and there find technical flaws, this cannot be surprising in a treatise outlined on so broad a foundation. As a propaedeutics, as an introduction into the study of the sciences this work is certainly admirable and deserving of close inspection on the part of teachers and of study on the part of those seeking such introduction.

E. K.

The Timber Pines of the southern United States. By Chas. Mohr, Ph. D., together with a discussion of the structure of their wood by Philabert Roth and an introduction by the Hon. B. E. Fernow, chief of the Division of Forestry Department of Agriculture. Bulletin 13, U. S. Dep't. of Agr. Dep't. of Forestry. One vol., pp. 160.

This is the first of a series of illustrated monographic works on the principal timber producing trees of the United States, and is devoted to the consideration of the group of pines found for the most part in the Gulf and south Atlantic coast states: Long Leaf pine, *Pinus palustris* Mill.; Cuban pine, *Pinus heterophylla* (Ell) Suclw.; Short Leaf pine, *Pinus echivata* Mill.; Loblolly pine, *Pinus Tæda* L.; Spruce pine, *Pinus glabra* Walt.

These extended investigations on the timber trees of the country are undertaken with the intention of furnishing data upon the rapidity of timber production throughout the life history of the tree, the time required for maturing a timber crop, the elements which are concerned in the make up of the quality of timber, the relation of soil and climate to timber growth and the commercial value of forest products, for the information and guidance of those who may desire to undertake forest management and cultivation for profit.

The chief interest of the chemist and pharmacist in this bulletin centres in an appendix to the work on the Long leaf pine, in which the naval store industry is briefly discussed. This industry is largely an American one and is one of the most important connected with the resources of American forests. A single item will serve to illustrate its importance. For the year 1892 the total production of spirits of turpentine alone amounted to more than 350,000 casks, requiring the orcharding of 2,500,000 acres of forest. Rosin, pine tar and pitch are other products obtained from the crude resin. The method of procuring the crude resin is described with illustrations of methods of orcharding, old and new, and the implements used.

The names of the veteran botanist Dr. Charles Mohr and the chief of the Division of Forestry, Hon. B. E. Fernow, are sufficient guarantee for the quality of their work. The anatomical work by Mr. Roth is excellent in every respect.

L. S. Cheney.

Repetitorium der Pharmacie für Anfänger und Vorgeschrittenere unter Berücksichtigung der Pharmacopœa Austriaca editio septima. Bearbeitet von Apotheker Carl R. Kreuz. Ein Bd., pp. 621. Druck und Verlag der Artist. Anstalt J. E. Kirchner's Witwe. Werschetz 1896.

This repertory, which has grown out of the author's earlier work, Pharmacognosie für den Erstunterricht, is to serve as a stepping stone to the commentary of the seventh edition of the Austrian pharmacopœia. It is divided into three parts, each part being supplied with one or more introductory chapters.

The first part comprises the pharmaceutical chemicals of the Austrian pharmacopœia, as well as unofficinal important ones, each being treated in the monograph style customary in such works. There is a general introduction, also chapters on analytical operations, utensils, reagents and volumetric solutions.

The pharmacognostical part contains a general introductory chapter, also chapters on the microscope, the elementary structure of the plant body, the most important plant constituents and their microscopic identification, and the preparation and application of the most important microscopic reagents. The drugs are treated in monograph style classified according to the natural orders to which they belong. Animal and mineral drugs receive mention in this part.

The third or pharmaceutical-technical part comprises what is better known in this country as operative and practical pharmacy. It includes chapters on apparatus and utensils used in a pharmaceutical laboratory, pharmaceutical operations and in the special part discusses the unofficinal galenicals, also in monograph style, the arrangement being an alphabetical one.

The appendix contains two tables: the first on the preservation of galenical preparations; the second on maximum doses for adults. The book

also has a detailed table of contents and a complete index.

A book that is to serve at least in part for beginners should contain illustrations. These are altogether wanting. Even if it is to serve as a repertory for the somewhat advanced they would prove very useful. Of what use the short chapter on the microscope and the still shorter fragment on the balance are to be except for cramming purposes is difficult to understand. On the whole the style of treatment is empirical rather than scientific and reminds in this respect of not few of our American treatises on the same or kindred subjects. As long as the fate of a candidate depends so largely or almost exclusively on an examination such books will be written and be found useful. One probably cannot blame authors or publishers directly, but a system that calls for such productions is far from being perfect.

E. K.

Zur Kenntniss der Isomerieverhältnisse bei den ungesättigten Säuren. Habilitationsschrift von Dr. Wilhelm Autenrieth, I. Assistenten des chem. Universitäts-Laboratoriums der med. Fakultät zu Freiburg i. Br. Brochure, pp. 82. Akademische Verlagsbuchhandlung von J. C. B. Mohr, (Paul Siebeck), Freiburg i. B. und Leipzig. 1896. M. 2.00.

It is the custom at German universities that instructors who have been given the venia legendi, in others words have acquired the right to deliver university lectures, deliver a public lecture under the auspices, as it were, of the faculty, which they are about to enter. Such lectures frequently present a resumé along recent lines of investigation in which the newly elected docent has been especially interested.

Any person who has at all attempted to keep posted with the general trend of recent chemical research knows that a very large percentage of the hundreds of articles that fill every month the numerous chemical journals are fragmentary and therefore often bewildering rather than instructive and classifying. Yet these unfinished reports seem to be a matter of necessity in these days of specialization. A resumé of work along a certain line, being deprived of the host of bewildering details, is therefore welcomed by the chemical student.

The unsaturated organic acids constitute an exceedingly interesting chapter in chemical isomerism. Those who are interested in chemical isomerism in general or in that of the unsaturated acids in particular will no doubt find this inaugural dissertation very interesting reading. *E. K.*

Ausführliches Lehrbuch der Pharmaceutischen Chemie. Bearbeitet von Dr. Ernst Schmidt. Dritte vermehrte Auflage. Zweiter Bd., Organische Chemie, Dritte Abtheilung. Ein Bd., pp. 1081—1770, mit in den Text eingedruckten Holzstichen. Druck und Verlag von Friedrich Vieweg und Sohn, Braunschweig. 1896. M. 14.50.

The treatise on pharmaceutical chemistry by the Director of the Pharmaceutical-Chemical Institutes of the University of Marburg is so well and favorably known even on this side of the Atlantic that it is not in need of an introduction to the pharmaceutical reader of the Review. The earlier editions as well as volumes one and parts one and two of volume two have been reviewed in due time in this journal. The general comment made on previous occasions applies to the final part of the second volume. In it the chapter on volatile oils is concluded and followed by others on camphors, resins, tannins, etc. Considerable space is devoted to the alkaloids, which are discussed at length and in detail. This chapter is followed by one on glucosides and by another on vegetable and animal coloring matters. The last chapters are devoted principally to substances of interest in animal physiology, albuminoids, proteides, albuminoid ferments, toxalbumines, etc. With the present swinging of the pendulum back to animal therapy these chapters should prove of special interest.

Everyone, who is at all familiar with this standard work on pharmaceutical chemistry, will welcome the completion of the third edition. It is one of those works without which a pharmaceutical library can hardly be considered complete. A three-column index of fifty-eight pages adds materially to the use of the work for reference purposes. *E. K.*

Pharmaceutischer Kalender 1897. Mit Notizkalender zum täglichen Gebrauch nebst Hilfsmitteln für die pharmaceutische Praxis. Herausgegeben von Dr. H. Boettger und Dr. B. Fischer. Sechsundzwanzigster Jahrgang.

I. Theil. Kalendarium, Schreib- und Notizkalender, Hilfsmittel für die pharmaceutische Praxis. pp. 142.

II. Theil. Pharmaceutisches Jahrbuch. pp. 181.

Verlag von Julius Springer, Berlin. 1897. M. 3.00.

In the absence of an American pharmaceutical almanach this annual no doubt has and will continue to be of considerable service to German speaking pharmacists in this country. Though much of the information given applies more particularly to the German empire, there is much the value and importance of which is not restricted to any one country. This is especially true of the information contained in the first part. The pharmaceutical yearbook constituting part two, though of less practical importance to the average American pharmacist, nevertheless contains interesting information with regard to the general economic and legal status of German pharmacy. This is but little understood by most American pharmacists. The second part also contains an article on the central supply of water to municipalities, institutes, and single buildings by Dr. Fischer, who is director of the chemical experiment station of Breslau.

This almanach has grown out of the Pharmaceutischer Kalender für Norddeutschland, of which it constitutes the thirty-seventh volume. Part one is bound in cloth, part two in paper cover.

E. K.

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EDITORIAL.

A well-known German pharmaceutical manufacturer is quoted as having made the following statement with regard to the present pharmaceutical depression: "The tendencies of the times will not be checked either by the practicing pharmacist or by the manufacturer"; and furthermore "that the manufacturer does not seek his salvation in fruitless complaints, but in helping himself." This has stirred up many a conservative German pharmacist, who feels that the statement is not only unsympathetic but that the gentleman would not have made this remark if he did not feel that by his methods of advertising directly to the physician and public he had safely placed his nets and that the pharmacist was caught in its meshes. The dictum that "God helps those who help themselves," brought home so forcibly to the long-suffering pharmacists, has caused the discussion of the semi-socialistic idea of cooperation. It is suggested that each section of the German Apothecaries Society conduct its own manufacturing plant. The idea has probably been taken from this country. It will be of interest to learn what the German pharmacist, who ought to be in position to carry out the plan successfully if such is possible, will do with this suggestion.

The Supreme Court of Ohio has recently rendered a decision that reminds one strongly of Goethe's words: "Es erben sich Gesetz und Rechte gleich einer ewigen Krankheit fort." The court holds unanimously that the standard of purity of drugs called for by the Ohio law is that of the Pharmacopœia of 1880 which was in general use when the statute was enacted and that "the sale of a drug which was equal to the standard of strength, quality and purity laid down in that edition is not rendered unlawful because it is below a higher standard laid down in a subsequently revised edition, though that edition was in general use when the sale was made;" and finally that "a copy of the subsequent revised edition is not competent evidence in the trial of a prosecution under the statute."

The writer does not want to lay down the law for the Supreme Court of Ohio or for any Court, but simply desires to point out what this decision implies. Unless the laws of other states designate specifically that the standard shall be that of the latest edition of the pharmacopœia in force at the time the sale was made—which very likely is not the case—the courts of the various states, if they follow the precedent set by Ohio, will soon decide that we have about as many standards of purity for drugs as we have different bushels of various grains, a thought that ought to make the advocates of our antiquated system of weights very happy indeed. But how about the druggist? May he be prosecuted in Ohio if he makes his preparations according to the United States Pharmacopœia of 1890, if the standard of the seventh edition differs from that of the sixth in force in 1887 at the time when the statute was enacted in Ohio? How about the manufacturer? Will he have to manufacture preparations of one standard for Ohio, others of a different standard e. g. for New York or Michigan? Our legislatures as a rule

were not short of lawyers. If the law is at fault and the court is all right, which presumably is the case, why does not the professional pride of the legal fraternity rise against the practices of their legislative colleagues rather than study the law years after it has been enacted in order to find some flaw. The fact simply is that lawyers are not so much seekers after truth as advocates. Incidentally this again emphasizes the necessity of a more careful study of our laws by competent persons and of an exposition for pharmaceutical students of law applied to pharmacy.

A recent number of the Pharmaceutical Era contains an article on Some interesting experiments with coated pills, by J. Fred. Windolph of Brooklyn.

The author shows that some pills examined possessed greater resistance than pine and demonstrates the fact to those who might be incredulous by a photograph of a pine board into which he has driven a number of pills, evidently with no serious result to the spherical character of the latter.

About six months previous the "Chemist and Druggist" called attention to a circular issued by the Danish Sanitary College to all pharmacists in Denmark, in which it is pointed out that the use of galenicals other than those made in the pharmacists' own laboratory is illegal. The comment is headed by the words "Setting back the clock of pharmacy" and the commentator sneers at the circular, "which enumerates various 'dangers' lurking in the new-fangled method of having one's pharmaceutical cookery done off the premises." If the Chemist and Druggists' collector of Foreign and Colonial News were treated to a dose of the above described pills he might be induced to give his colleagues across the North Sea such credit as they deserve.

Whereas it is deplored by some that the good old times have gone by when the pharmacist collected his own medicinal herbs, made all the galenicals prescribed by the pharmacopœia and even supplied the early laboratory student in chemistry with the necessary reagents; others have greeted the advent of elegant pharmacy made possible by the large pharmaceutical manufacturer as the dawn of a new era of our calling. A similar change has taken place in the arts. Home industry and the small shop have almost completely given way to the large manufacturing establishments. The concentration of small enterprises and the high degree of specialization of the artisan have revolutionized the mechanical industries. Perfection and finish of the highest order have been attained, the cost of production has been reduced and what was formerly impossible has become mere child's play as it were. Yet the blessing is not without alloy. The all round development of the artisan with his organized service as apprentice and assistant are things of the past. The social problems of the factory confront us and demand solution.

At the last meeting of the Wisconsin Pharmaceutical Association the writer called attention to the fact that in a certain city not a single specimen of bitter almond oil could be found, but that all the druggists who supposed themselves in possession of the article had paid a high price for impure benzaldehyde. The conclusion might be drawn that every pharmacist ought to distill his own bitter almond oil rather than pay a high price for a fraudulent article. Such indeed would imply a "setting back of the clock of pharmacy." There is no need whatever for such a procedure, for a scientifically educated pharmacist can ascertain more readily whether a bottle labeled bitter almond oil really contains such, than he can prepare it. There is no more reason why the pharmacist should attempt to do what the manufacturer can do better for him, than for a contractor to make himself the material with which he is to erect a given structure. The contractor, however, must test his building material before he puts it into a bridge, a building etc. If he did not he would be accused of criminal negligence. So the pharmacist. There exists, however, this difference. The engineer who builds a faulty bridge is soon found out. The guilty pharmacist may not be discovered even by the writer of the prescription.

As to galenicals, to which the Danish Board of Health alludes, one important factor must not be overlooked. It may be argued that the pharmacist who cannot or does not examine his bitter almond oil has no business to practice his chosen calling and should make room for the competent and honest. But how about galenicals? The pharmacopœias of the most highly civilized nations prescribe tests for but very few. Whereas they do not direct how chemicals are to be made, they direct how they are to be tested. Galenicals, as a rule, are directed to be made simply because our knowledge of them is so utterly insufficient that satisfactory tests cannot be provided. The person who ridicules the action of the Danish Board as setting back the clock of pharmacy evidently does not know what the word pharmacy implies. We shall all hail the day when galenicals can be tested with the accuracy with which chemicals can be tested to-day, but until then let us respect those who assume responsibility for the articles they dispense by making their galenicals from materials that can at least be identified.

The questions whether a better product can be turned out by the manufacturer on a large scale than by the practicing pharmacist on a small scale; whether the manufacturing pharmacist actually produces a better article than the druggist who is not trained to do the work; whether physician and public are warranted in having greater confidence in the manufacturer under conditions such as prevail in our country, are entirely distinct. Under the legal, educational and economical conditions existing in Denmark the Danish Sanitary College has certainly acted wisely by emphasizing that the pharmacist is responsible and that if he has no means of ascertaining by analysis the purity of an article he must himself make it from materials which he can test in accordance with the requirements of his pharmacopœia. Any setting back of the clock of pharmacy that results in the placing of responsibility where it belongs can have nothing but a wholesome effect.

The Apprenticeship-System in the Arts.

In an article on the apprenticeship-system* the writer several years ago traced the rise, prime and decline of this institution as applied to the arts in general, and demonstrated how the pharmaceutical apprenticeship grew naturally out of the general system at an early date and that there is no longer any reason for its continuance at the present time. In connection with a discussion on the education of the chemist, representing a profession so closely related to that of the pharmacist, the writer has more recently† availed himself of the opportunity to point out what the pharmacist must do if he desires to be recognized as a professional person.

The writer is fully aware that the arguments presented in the articles referred to appeal to a comparatively small number only, because a large percentage of druggists have no desire to be professional men, but business-men pure and simple. Some of these realize only the obstacles placed in their way by pharmaceutical legislation; and would prefer to have pharmacy, like any other business, open to unlimited competition common to all forms of business. Others would like to see their calling distinguished by a protective form of legislation enabling them to do business with the proverbial high percentage of gain reputed to the drug-trade.

It matters but little whether the druggist as a business-man belongs to the protected aristocratic or to the *laisser-faire* democratic class. In neither case will he be greatly affected by arguments of an educational character. Several years ago when the writer presented his views on the apprentice to a pharmaceutical audience, he was confronted by the query: "Where will we get our boys?" Inasmuch as this query voiced the sentiment of a large number of druggists, it clearly demonstrates that with many if not with most druggists the question is not one of principle, but one that is very largely influenced by the purse.

But if it were to be granted that the pursuit of the druggist is not to be that of a learned profession, but merely a trade, the responsibility and pride of keeping up or raising the standard of the calling will have to induce druggists' unions to take the very same step advocated, namely, the abolition of the system of taking apprentices.

In an article on "The decadence of the apprenticeship-system" the editor of the Scientific American, some time ago, after expressing his regrets over the degeneration of the system as a natural consequence of our modern industrial development, points to a solution of the difficulty by calling attention to the action of the National Association of Builders. Inasmuch as the opinion of a man, who cannot be considered an educational enthusiast, ought to have some weight with druggists, it may not be amiss to quote in part the editorial referred to.

"It must be admitted, however, that excellent as were the results under the old apprentice system it would be impossible to carry it out under the present industrial conditions. The apprentice was 'bound' to his master, lived under his roof, and ate at his board. Modern social conditions and the modern temperament would not lend themselves to a compact in which the position of the boy was one of very pronounced servitude; and the keen competition in the various industries, the close margin upon which the master mechanic has to figure in competing for a share of the trade, the speed and thorough system which are necessary in a modern workshop, all render the careful training of green hands in the shops a practical impossibility. . . . . .

"But if the old system, good as it was, is impracticable to-day, and the methods of to-day are so faulty, what, it will be asked, is to be the remedy? . . . . . .

"The National Association of Builders has recommended that a lad who wished to enter a trade should go first to a trade school, and discover in which direction his tastes and aptitude lay. After passing an examination by a committee of master mechanics at the close of his course, he should enter the work-shop as a junior. Here he would acquire speed and execution, and by the time he was capable of doing a 'full day's work' he would be subjected to a second examination, the passing of which entitled him to be ranked as a journeyman."

E. K.

* Pharm. Rundschau, 12, p. 229.
† Ibid. 14, p. 49.

Table of Specific Gravities for U. S. P. Preparations.

Calculated by *F. Dietze.*

	15°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°
Acid. aceticum, 36 p. c...	1,048	1,050	1,050	1,049	1,049	1,048	1,048	1,047	1,047	1,046	1,046	1,045	1,045	1,044	1,044	1,043	1,043	1,042	1,041	1,041	1,040	1,040
Acid. aceticum glaciale...	1,058	1,063	1,062	1,061	1,060	1,059	1,058	1,057	1,056	1,055	1,054	1,053	1,052	1,051	1,050	1,050	1,049	1,048	1,047	1,046	1,045	1,044
Acid. hydrobrom. dilut...	1,077	1,079	1,078	1,078	1,078	1,077	1,077	1,077	1,076	1,076	1,076	1,075	1,075	1,075	1,074	1,074	1,073	1,073	1,073	1,072	1.072	1,072
Acid. hydrochloricum.....	1,163	1,166	1,165	1,165	1,164	1,164	1,163	1,163	1,162	1,162	1,161	1,161	1,160	1,160	1,159	1,159	1,158	1,157	1,157	1,156	1,156	1,155
Acid. hydrochlor. dilut...	1,050	1,051	1,051	1,051	1,050	1,050	1,050	1,050	1,050	1,049	1,049	1,049	1,049	1,048	1,048	1,048	1,048	1,047	1,047	1,047	1,047	1,046
Acid. lacticum.....	1,213	1,216	1,216	1,215	1,214	1,214	1,213	1,213	1,212	1,211	1,211	1,210	1,210	1,209	1,208	1,208	1,207	1,206	1,206	1,205	1,204	1,204
Acid. nitricum dilut.....	1,057	1,059	1,058	1,058	1,058	1,057	1,057	1,057	1,056	1,056	1,055	1,055	1,055	1,054	1,054	1,054	1,053	1,053	1,052	1,052	1,052	1,051
Acid. phosphoric. dilut...	1,057	1,058	1,058	1,058	1,058	1,057	1,057	1,057	1,057	1,056	1,056	1,056	1,056	1,056	1,055	1,055	1,055	1,055	1,054	1,054	1,054	1,054
Acid. sulphuricum.....	1,835	1,840	1,839	1,838	1,837	1,836	1,835	1,834	1,833	1,832	1,831	1,830	1,829	1,827	1,826	1,825	1,824	1,823	1,822	1,821	1,820	1,818
Acid. sulphuricum dilut..	1,070	1,072	1,072	1,071	1,071	1,070	1,070	1,070	1,069	1,069	1,068	1,068	1,067	1,067	1,066	1,066	1,065	1,065	1,065	1,064	1,064	1,063
Aether.....	0,725–0,728	0,730	0,729	0,729	0,728	0,727	0,726	0,725	0,724	0,723	0,722	0,721	0,720	0,719	0,718	0,717	0,715	0,714	0,713	0,712	0,711	0,710
Aether aceticus.....	0,893–0,895	0,898	0,898	0,897	0,896	0,895	0,894	0,893	0,892	0,892	0,891	0,890	0,889	0,888	0,888	0,887	0,886	0,885	0,884	0,884	0,883	0,882
Alcohol.....	0,820	0,824	0,823	0,822	0,822	0,821	0,820	0,819	0,818	0,818	0,817	0,816	0,815	0,814	0,814	0,813	0,812	0,811	0,810	0,810	0,809	0,808
Alcohol absolutus.....	0,797	0,801	0,800	0,799	0,799	0,798	0,797	0,796	0,795	0,795	0,794	0,793	0,792	0,791	0,791	0,790	0,789	0,788	0,787	0,786	0,785	0,784
Alcohol dilutus.....	0,936	0,940	0,939	0,939	0,938	0,937	0,936	0,936	0,935	0,934	0,934	0,933	0,932	0,932	0,931	0,930	0,930	0,929	0,928	0,928	0,927	0,927
Amyl Nitris.....	0,870–0,880	0,879	0,878	0,878	0,877	0,876	0,875	0,874	0,872	0,871	0,870	0,869	0,868	0,866	0,865	0,864	0,863	0,862	0,860	0,859	0,858	0,857
Aqua Ammoniæ.....	0,960	0,961	0,961	0,961	0,961	0,960	0,960	0,960	0,959	0,959	0,959	0,959	0,958	0,958	0,958	0,957	0,957	0,957	0,957	0,956	0,956	0,956
Balsam. Peruvianum.....	1,135–1,140	1,140	1,140	1,139	1,138	1,137	1,137	1,136	1,135	1,134	1,133	1,133	1,132	1,131	1,130	1,129	1,128	1,128	1,127	1,126	1,125	1,124
Benzinum.....	0,670–0,675	0,677	0,676	0,675	0,674	0,673	0,672	0,671	0,670	0,670	0,669	0,668	0,667	0,666	0,665	0,664	0,663	0,662	0,660	0,659	0,658	0,657
Carbonei Disulphidum....	1,268–1,269	1,275	1,274	1,273	1,272	1,270	1,269	1,267	1,266	1,265	1,264	1,262	1,261	1,260	1,259	1,258	1,256	1,255	1,254	1,253	1,251	1,250
Chloroformum.....	1,490	1,498	1,496	1,495	1,493	1,492	1,490	1,488	1,486	1,485	1,483	1,481	1,479	1,478	1,476	1,474	1,473	1,471	1,469	1,467	1,465	1,463
Creosotum.....	1,070	1,075	1,074	1,073	1,072	1,071	1,070	1,069	1,068	1,067	1,067	1,066	1,065	1,064	1,063	1,062	1,061	1,060	1,060	1,059	1,058	1,057
Glycerinum.....	1,250	1,253	1,252	1,252	1,251	1,250	1,250	1,249	1,249	1,248	1,248	1,247	1,247	1,246	1,245	1,245	1,244	1,244	1,243	1,243	1,242	1,242
Liq. Ferri Acetatis.....	1,160	1,160	1,160	1,161	1,161	1,160	1,160	1,160	1,159	1,159	1,158	1,158	1,158	1,157	1,157	1,156	1,156	1,156	1,155	1,155	1,155	1,154
Liq. Ferri Chloridi.....	1,387	1,390	1,390	1,389	1,389	1,388	1,387	1,387	1,386	1,385	1,384	1,384	1,383	1,382	1,381	1,381	1,380	1,379	1,378	1,378	1,377	1,376
Liq. Ferri Tersulphatis..	1,320	1,323	1,323	1,322	1,321	1,321	1,320	1,320	1,319	1,318	1,318	1,317	1,317	1,316	1,315	1,315	1,314	1,314	1,313	1,312	1,312	1,311
Liq. Plumbi Subacetatis.	1,195	1,197	1,196	1,196	1,196	1,195	1,195	1,195	1,194	1,194	1,193	1,193	1,193	1,192	1,192	1,191	1,191	1,191	1,190	1,190	1,189	1,189
Liq. Potassæ.....	1,036	1,037	1,037	1,037	1,036	1,036	1,036	1,036	1,036	1,035	1,035	1,035	1,035	1,035	1,034	1,034	1,034	1,034	1,033	1,033	1,033	1,033
Liq. Sodæ.....	1,059	1,060	1,060	1,060	1,060	1,059	1,059	1,059	1,059	1,058	1,058	1,058	1,058	1,057	1,057	1,057	1,057	1,056	1,056	1,056	1,055	1,055
Ol. Amygdalar. express..	0,915–0,920	0,921	0,920	0,919	0,919	0,918	0,918	0,917	0,916	0,916	0,915	0,914	0,913	0,913	0,912	0,911	0,911	0,910	0,909	0,909	0,908	0,907
Ol. Anisi.....	0,980–0,990	—	—	—	—	solid	0,985	0,984	0,984	0,983	0,982	0,982	0,981	0,980	0,980	0,979	0,978	0,978	0,977	0,976	0,975	0,975
Ol. Cari.....	0,910–0,920	0,919	0,918	0,917	0,917	0,916	0,915	0,915	0,914	0,913	0,913	0,912	0,911	0,911	0,910	0,909	0,909	0,908	0,907	0,907	0,906	0,905
Ol. Caryophylli.....	1,060–1,067	1,067	1,066	1,065	1,065	1,064	1,063	1,062	1,061	1,060	1,059	1,059	1,058	1,057	1,056	1,055	1,054	1,053	1,052	1,051	1,051	1,050
Ol. Cinnamomi.....	1,055–1,065	1,065	1,064	1,063	1,062	1,061	1,060	1,059	1,058	1,058	1,057	1,056	1,055	1,054	1,053	1,052	1,051	1,051	1,050	1,049	1,048	1,047
Ol. Foeniculi.....	0,960	0,963	0,962	0,962	0,961	0,960	0,960	0,959	0,958	0,958	0,957	0,956	0,956	0,955	0,954	0,953	0,953	0,952	0,951	0,950	0,950	0,949
Ol. Lini.....	0,930–0,940	0,938	0,937	0,937	0,936	0,936	0,935	0,934	0,934	0,933	0,932	0,932	0,931	0,930	0,929	0,929	0,928	0,928	0,927	0,926	0,926	0,925
Ol. Menth. piperit.....	0,900–0,920	0,913	0,912	0,912	0,911	0,910	0,910	0,909	0,909	0,908	0,907	0,907	0,906	0,905	0,905	0,904	0,903	0,903	0,902	0,901	0,901	0,900
Ol. Olivæ.....	0,915–0,918	solid	0,919	0,918	0,918	0,917	0,917	0,916	0,915	0,915	0,914	0,913	0,912	0,912	0,911	0,910	0,910	0,909	0,908	0,908	0,907	0,906
Ol. Ricini.....	0,950–0,970	0,962	0,962	0,961	0,961	0,960	0,960	0,959	0,959	0,958	0,958	0,957	0,957	0,956	0,956	0,955	0,955	0,954	0,954	0,953	0,952	0,952
Ol. Sinapis volatile.....	1,018–1,029	1,027	1,026	1,025	1,025	1,024	1,023	1,022	1,021	1,021	1,020	1,019	1,018	1,017	1,016	1,015	1,015	1,014	1,013	1,012	1,011	1,010
Ol. Terebinthinæ.....	0,855–0,870	0,865	0,865	0,864	0,863	0,862	0,862	0,861	0,860	0,860	0,859	0,858	0,857	0,857	0,856	0,855	0,854	0,854	0,853	0,852	0,851	0,851
Spirit. Aetheris nitrosi...	0,836–0,842	0,843	0,842	0,841	0,841	0,840	0,839	0,838	0,838	0,837	0,836	0,835	0,834	0,883	0,832	0,831	0,830	0,830	0,829	0,828	0,827	0,826
Syrupus.....	1,317	1,320	1,319	1,319	1,318	1,318	1,317	1,317	1,316	1,315	1,315	1,314	1,314	1,313	1,313	1,312	1,312	1,311	1,311	1,310	1,309	1,309

Medicinal Plants of Brazil.*

By *Dr. Theodor Peckolt of Rio de Janeiro.*

Cryptocaria Mandioccana Meissn. Dieser circa 10 Meter hoher Baum kommt vor in den Staaten Espirito Santo und Rio de Janeiro und ist bekannt als *Cajaty*. Die aromatischen, ovalen Beeren von der Grösse einer Harzkirsche werden vom Volke nicht benutzt; nur die schwach aromatisch riechende, bitterschmeckende Rinde dient als Thee bei Magenbeschwerden, Kolik und Diarrhoe. Zu gleichem Zwecke dient die Rinde der in den Staaten Pará und Amazonas vorkommenden *Ajonea tenella* Nees. Das Bäumchen wird *Ajuba* und *Ai-uba* benannt. Das weisse, sehr feste Holz dient zu häuslichen Geräthschaften.

Cryptocaria densiflora Nees. Dieser dickstämmige, kleine Baum ist bekannt unter der Tugebenennung *Anhauiana* — hartes Holz. Das Holz dient zu Pfeilspitzen.

Ajonea brasiliensis Meissn. Ein stark stämmiger Baum welcher in allen Staaten von Bahia nördlich bis zum Aequator vorkommt und *Amajouva* benannt wird. Die Eingebornen benutzen die Blätter zur Heilung von Wunden. Das sehr dauerhafte feste Holz wird zu Bauten und Schiffen benutzt.

Silvia navalium Fr. Allem. Dieser Baum wächst auf den Gebirgen der Staaten Minas und Rio de Janeiro und heisst *Tapinhoam, Tapinhoâ* — Beulenbaum. Es ist ein kolossaler Urwaldbaum mit 16 bis 20 Meter hohem Stamm, welcher unten einen Umfang von 3 bis 6 Metern besitzt und mit einer dicken, korkartigen, an verschiedenen Stellen beulenartig aufgetriebenen, hell aschgrauen, doch nicht rissigen Rinde bedeckt ist. Die gekrümmten Aeste bilden eine dichte Krone, mit an den Spitzen der Zweige angehäuften Blättern. Diese sind lederartig, länglich schmal, stumpf oder spitz, oberseits dunkel-, unterseits hellgrün. Der Blüthenstand besteht aus verzweigten, lockeren Rispen, mit gelblichen Blüthen. Die Beere ist oval, 4 Cm. lang und besitzt einen Durchmesser von 18 bis 23 Mm. Der Baum blüht im December und reift seine Frucht im Juni. Das Holz ist zum Schiffsbau das gesuchteste. Zur Zeit der portugiesischen Besitzung wurde es als *Madeira de lei* bezeichnet. Der Eigenthümer konnte es zum eigenen Gebrauch benutzen, doch bei strenger Strafe nicht exportiren. Er durfte es nur an die Regierung verkaufen. Ausser der Dauerhaftigkeit hat es die vorzügliche Eigenschaft, dass es nicht von dem hier so häufigen und schädlichen Bohrkäfer (*Bostrichus*) beschädigt wird. Deshalb dient es ausser zum Schiffsbau auch vorzugsweise zu Tonnen und ähnlichem Fasswerk, zur Aufbewahrung und Versendung von Zucker, von Branntwein und Wein. Nach Faldauha hat es ein sp. Gew. von 0.741, nach Dr. del Vechio 0.997. Die Rinde wird als Adstringens benutzt, liefert auch eine grobe, doch sehr starke und dauerhafte Faser zur Anfertigung von Stricken.

Silvia Itauba Pax. Findet sich in den Nordstaaten und ist unter der Tupibenennung *Itauba*

Cryptocaria Mandioccana Meissn. This tree, reaching a height of about 10 meters, is found in the states Espirito Santo and Rio de Janeiro and is known as *Cajaty*. The aromatic, oval berries of the size of a Harz cherry are not used by the people; only the weakly aromatic, sickening, bitter-tasting bark is used, taken as a tea in stomach troubles, colic and diarrhœa. The same purpose is served by the bark of *Ajonea tenella* Nees., a tree occuring in the states Pará and Amazonas. This small tree is called *Ajuba* and *Ai-uba*. The white, very firm wood is used for domestic materials.

Cryptocaria densiflora Nees. This small, thick stemmed tree is known by the Tuge name *Anhauiana* — hard wood. It is used for arrowpoints.

Ajonea braziliensis Meissn. A thick stemmed tree which is found in all states from Bahia northward to the equator and is called *Amajouva*. The natives use the leaves to help the healing of wounds. The very durable, firm wood is used in buildings and ships.

Silvia navalium Fr. Allem. This tree grows in the mountainous regions of the states Minas and Rio de Janeiro, and is known as *Tapinhoam, Tapinhoâ*—"Beulenbaum." It is a giant of the primitive forests. The trunk varies from 16 to 20 meters in height and its lower circumference from 3 to 6 meters. It is covered with an ash-gray, thick, corky bark, which at various places has developed protuberances, but is not fissured. The crooked branches form a dense crown, the leaves being crowded at the ends of the twigs. The leaves are leathery, narrowly-oblong, blunt or acute; the upper surface is dark, the lower surface light green. The inflorescence consists of branched, loose panicles with yellow flowers. The berry is oval, 4 cm. long and has a diameter of 18 to 23 mm. The tree blossoms in December and the fruit ripens in June. The wood is sought more than any other for ship-building. During the time of the Portugese occupation it was designated *Madeira de lei*. The owner could use it for private consumption, but upon severe penalty was forbidden to export it. He was permitted to sell it only to the government. Besides its durability it possesses the excellent quality of not being attacked by the common borer (*Bostrichus*). For this reason it is also used in the manufacture of barrels and casks for the storage and transportation of sugar, brandy and wine. According to Faldauha it has a sp. gr. of 0.741, according to Dr. del Vechio of 0.997. The bark is used as an astringent. It also yields a fibre, which, though coarse, is strong and durable and is used for the manufacture of ropes.

Silvia Itauba Pax. This tree is found in the northern states and is known by the Tupi name

* Continued from Vol. 14, p. 250. Translated for the Review by Dr. R. H. True, Asst. Prof. of Pharmacognosy at the University of Wisconsin.

— Steinholz bekannt. Es ist ein schöner, grosser, bis 20 Meter hoher Baum von ¾ Meter Durchmesser. Die Blüthen sind länglich-elliptisch, verkehrt eiförmig, stumpf, an der Basis spitz verlaufend. Der Blüthenstand besteht aus straussähnlichen Rispen. Die Beere ist klein, länglich oval. Das mattgelbe Holz wird vorzugsweise zu Booten benutzt.

Die Varietät **amarella** Meissn., als *Itauba amarella* — gelbes Steinholz bekannt, unterscheidet sich durch länglich lancettliche, stumpfe Blätter. Die glänzend braunen, ovalen Blätter sind grösser. Das tiefgelb gefärbte Holz hat gleiche Benutzung und ist sehr gesucht zur Möbelfabrikation. Die Rinde dient ebenfalls als Adstringens. Ebenso sind als vorzügliches Bauholz geschätzt:

Acrodiclidium guyanense Nees. var. **caudatum** Meissn., *Itauba branoa* — weisses Steinholz, welches in den Staaten Para und Amazonas vorkommt. Das Holz ist weiss.

Acrodiclidium anacardioides Spruce, rothes Steinholz mit rothbräunlichem Holz. Diese gehörten sämmtlich zu den *Madeiras de lei.*

Acrodiclidium Camara Schomb. Dieser Baum ist im Staate Amazonas, besonders am Flusse Rio Negro, als *Itauba camara*, an der Grenze von Goyana als Càa-mara — Blattbaum bekannt. Es ist ein 10 bis 14 Meter hoher Baum mit dichtbelaubter Krone. Die Blätter sind lederartig, länglich elliptisch, spitz oder stumpf, oberseits glänzend grün, unterseits braun. Die Blüthen bestehen aus doldenartigen Rispen. Die Beeren sind länglich, ähnlich einer grossen Eichel, von dunkelgelber Farbe, bis zur Mitte von der Achse becherförmig umschlossen. Dieselben haben einen angenehmen, etwas Pichurim-ähnlichen Geruch und bitter aromatischen Geschmack. Dieselben werden gespalten, auf Fäden gereiht und getrocknet. Als Heilmittel sind sie geschätzt bei Krampf, Hysterie, fluor albus, Kolik, Ruhr etc. Das dauerhafte, bräunliche Holz dient zu Bauten.

Acrodiclidium chrysophyllum Meissn. Diese Art findet sich in den Staaten Maranhon, Para und Amazonas, wo dieselbe Sassafras benannt wird. Das nach hier importirte Holz ist bekannt als *Sassafraz do Para.* Es ist ein dünnstämmiger Baum, mit steiflederartigen, länglich elliptischen, zugespitzten Blättern, oberseits glänzend grün, unterseits goldgelb, seidenhaarig. Die Blüthenrispen sind straussartig und braun befilzt. Die Rinde besitzt einen aromatischen, Sassafras und Zimmetähnlichen Geruch sowie einen bitter gewürzhaften Geschmack. Als Thee dient dieselbe bei Verdauungsschwäche, als Carminativum und mildes Diureticum. Das angenehm riechende Holz wird in Form eines Decocts bei Rheumatismus angewandt: dreimal täglich eine Tasse. Die Sägespähne dienen zur Räucherung der Zimmer, als Desinfectans und auch zur Vertreibung der Mücken. Das Holz ist sehr gesucht zur Anfertigung von Toilettenmöbeln.

Aydendron permolle Nees. Dieser in den Nordstaaten, am häufigsten am Amazonenstrom vorkommende Baum heisst *Aü-üva* und *Ai-uba* — Faulthierbaum. Dieser riesige Urwaldbaum erreicht eine Höhe von 35 Metern. Die Blätter sind steif lederartig, länglich oval, zugespitzt, oberseits dunkelgrün, unterseits rostfarben und befilzt. Der Blüthenstand besteht aus gedrängt stehenden doldtraubenförmigen Rispen. Die Beere ist von der Grösse eines kleinen Apfels. Aus dem Samen wird

Itauba — stonewood. The tree is handsome and large, up to 20 meters in height, and has a diameter of ¾ meter. The flowers are oblong-elliptical, obovate, blunt, acute at the base. The inflorescence consists of bouquet-like panicles. The berry is small, oblong oval. The light yellow wood is used preferably for boats.

The variety **amarella** Meissn., known as *Itauba amarella* — yellow stonewood, is distinguished by its blunt, oblong-lanceolate leaves. The glossy brown, oval leaves are larger. The dark yellow colored wood is used for similar purposes and is sought very much for the manufacture of furniture. The bark also serves as astringent. Several other species are also highly esteemed as timber wood:

Acrodiclidium guyanense Nees. var. **caudatum** Meissn., *Itauba branoa* — white stonewood, which is found in the states of Para and Amazonas. Its wood is white.

Acrodiclidium anacardioides Spruce, red stonewood, with a reddish-brown wood. All of these belonged to the *Madeiras de lei.*

Acrodiclidium Camara Schomb. This tree is known in the state Amazonas, especially along the Rio Negro, as *Itauba camara*, on the border of Goyana as Càa-mara — leaftree. It is 10 to 14 meters high and has a densely foliaged crown. The leaves are leathery, oblong-elliptical, acute or obtuse, glossy green on the upper surface, brown on the lower surface. The inflorescence consists of umbel-like panicles. The berries are oblong, similar to a large acorn, of a dark yellow color and surrounded by a cup to the middle of its axis. They possess a pleasant, somewhat pichurim-like odor, and a bitter aromatic taste. They are split, strung on threads and dried. As medicament they are esteemed in convulsions, hysterics, fluor albus, colic, diarrhœa, etc. The durable wood serves for building purposes.

Acrodiclidium chrysophyllum Meissn. This species is found in the states Maranhon, Para, and Amazonas, where it is known as sassafras. The wood imported from those states is known as *Sassafraz do Para.* The tree has a thin trunk. The leaves are stiff, leathery, oblong-elliptical, acuminate, glossy green on the upper surface, golden yellow and silky on the lower surface. The floral panicles are bouquet-like, brownish-tomentose. The bark possesses an aromatic, sassafras- and cinnamon-like odor and a bitter, spicy taste. As tea it serves as remedy in dyspepsia, also as carminative and mild diuretic. The pleasantly odoriferous wood is used as decoction against rheumatism. Dose: a cup-full three times daily. The sawdust is employed for the fumigation of rooms, as disinfectant and against mosquitoes. The wood is sought for the manufacture of bed-room furniture.

Aydendron permolle Nees. This tree occurs in the northern states, principally along the Amazon, and is known as *Aü-üva* and *Ai-uba* — sloth tree. This giant forest-tree reaches a height of 35 meters. The leaves are stiff leathery, oblong-oval, acuminate, dark green on the upper surface, rusty red and tomentose on the lower surface. The inflorescence consists of crowded umbellate racemose panicles. The berry is of the size of a small apple. From the seed a starch is prepared,

ein Stärkemehl bereitet, welchem das darin enthaltene Harz einen aromatischen Geruch und Geschmack verleiht. Als Volksmittel dient es bei Verdauungsschwäche, bei Kolik der Kinder, Diarrhœ etc. Das weisse Holz dient zu Bauten.

Aydendron floribundum Meissn. Dieser Baum ist am häufigsten *Canella abacate*—Abacatezimmtbaum benannt; im Distrikt Cantazallo auch *Canella do brejo* — Sumpfzimmtbaum. Dieser im Staate Rio de Janeiro vorkommende Baum ist dünnstämmig und bis 12 Meter hoch. Die Blätter sind länglich lancettlich. Die gelben, wohlriechenden Blüthen sind in sehr kurz gestielten, reichblüthigen Rispen arrangirt. Die Beere ist von der Grösse und Form einer Abacatefrucht, deshalb die Benennung. Das Mesocarp ist fest parenchymatœs, das Endocarp knochenartig. Die Samen sind länglich oval, fünf Centimeter lang, stärkemehlhaltig und reifen im Juni. Der Geruch ist mild aromatisch, der Geschmack mild, bitter gewürzhaft. Das Stärkemehl wird wie bei der vorhergehenden Art benutzt. Die gepulverten Samen werden bei Leucorrhea benutzt, die Tinctur mit Wein als Tonicum. Das Mesocarp dient als energisches Adstringens, das Decoct der Blätter zu Waschungen unreiner Wunden. Das weisse Holz wird vorzugsweise zu Plafondbrettern benutzt.

which has an aromatic odor and taste due to the contamination with resin. As popular remedy it is used against dyspepsia, infantile colic, diarrhœa etc. The wood is used as timber.

Aydendron floribundum Meissn. This tree is commonly known as *Canella abacate* — abacate cinnamon tree; in the district of Cantazallo also as *Canella do brejo* — swamp cinnamon tree. It occurs in the state of Rio de Janeiro, has a thin stem and attains a height of 12 meters. The leaves are oblong-lanceolate. The yellow, odoriferous flowers are arranged in very short peduncled, many flowered panicles. The berry is of the size and form of an abacate, hence the name. The mesocarp is firm, parenchymatous, the endocarp bony. The seeds are oblong-oval, five centimeters long, contain starch and ripen in June. Their odor is mildly aromatic, the taste a mildly bitter aromatic. The starch is used like that of the above species. The powdered seeds are used in leucorrhœa, the tincture with wine as a tonic. The mesocarp serves as a powerful astringent, the decoction of the leaves for washing unclean wounds. The white wood is used preferably for ceilings.

(To be continued.)

Assay of Johore Gambier.

By *W. O. Richtmann.*

Among the drugs purchased by the University of Wisconsin at the close of the Columbian Exposition there is a collection of Johore gambier, which was incorporated with the pharmaceutical cabinet. A chemical examination, particularly as to tannin and catechin content, was not only desirable in order to make these specimens more valuable for cabinet purposes, but was of interest also for the sake of comparison with gambier previously examined.

The moisture determinations were made by drying the comminuted gambier until of constant weight, in a waterbath drying oven. The ash determinations were made by incineration of the dried product. The tannin estimations were made according to a slightly modified process recommended in 1885 by the Commission of German technical chemists[1]). The catechin assay was made according to Trimble[2]) by extracting the aqueous solution with ether.

Cabinet specimen 2900 consisted of large irregular masses, was brittle and resembled in general appearance the ordinary lump catechin.

Specimen 2901 consisted of pieces which were fairly regular in shape, nearly rectangular in outline. The average dimensions were about 27x47x39 mm, the average weight 57.7 grams. The blocks were slightly gummy but did not resist comminution in a mortar.

Specimen 2902 consisted of dark brown cubes, the sides of which measured about 25 mm. The average weight was 6.06 grams. The article was easily pulverized.

Specimen 2904 consisted of smaller, light brown cubes, the sides of which measured about 11.5 mm. The average weight was 4.8 grams. The cubes were dry and readily pulverized.

Specimen 2905 resembled specimen 2902 very much, but was much lighter in color.

Specimen 2906 consisted of disc-shaped pieces about 7×55 mm. The average weight was 19.2 grams. The pieces were very gummy and covered with mould.

Specimen Number.	Moisture.	Ash.[5]	Tannin.	Catechin.
2900	12.37%	4.35%	39.63%	11.10%
2901	11.20%	3.63%	32.51%	9.22%
2902	1.38%	3.65%	40.51%	9.39%
2904	1.50%	1.87%	46.95%	5.25%
2905	8.37%	3.77%	22.21%	8.68%
2906	7.00%	4.13%	29.94%	6.98%

In some of the samples, especially numbers 2901 and 2900 small cavities were found which seemed to have been formed by fermentation. Small crystals, probably catchin, projected into the cavities. A biological examination according to the culture method was made. The absence of bacteria was demonstrated, but the presence of two fungi, *Penicillium glaucum* and *Aspergillus niger* was demonstrated. The biological examination was conducted under the direction of Mr. W. D. Frost, instructor in bacteriology. Specimens 2901 and 2905, which correspond as to general description with the specimens of Johore gambier examined by Macewan[3]) in 1885, agree also well as to tannin content. The highest percentage of tannin found in these Johore specimens also corresponds with the highest percentage of the same constituent found by Trimble[4]) in commercial gambier. It is

1) See Trimble; The Tannins, p. 43.
2) Proc. A. Ph. A., 36, p. 100.
3) Am. Journ. Pharm., 57, p. 312.
4) Proc. A. Ph. A., 36, p. 101.
5) Calculated for inormal substance.

of interest to note that whereas no general rule can be laid down from the results so far recorded between the tannin and catechin content, that those specimens examined by Trimble and the writer which contained the highest percentage of tannin contained also the lowest percentage of catechin. It would be of no little interest to ascertain whether a direct relation exists between the two and whether the conversion of the one into the other is brought about or aided by vegetable organisms.

Pharm. Chem. Laboratory,
University of Wisconsin

Purification of Natural Cumarin.*

By *Edo Claassen.*

To purify the crude commercial cumarin, which is usually mixed with pieces of tonka beans, sand etc., the same may be dissolved in hot alcohol and the crystals obtained after cooling, redissolved and recrystallized until pure and white, or it may be treated in the following way: To the cumarin contained in a capacious copper distilling-vessel, a considerable quantity of benzin of a low specific gravity, for instance of 0.710 is added, the vessel connected with a condenser and the latter provided with a flask to receive the distillate, if any. The liquid is then heated to the boiling point and kept boiling for about 5 or 10 minutes, when any fire present is removed and the benzin solution poured into a well warmed bottle. When cold, the crystals, of a considerable size often, have appeared; they are collected on a filter and dried. The benzin is again poured on the crude cumarin and the same operation repeated as long as necessary to extract the cumarin from the crude article. While the first crystallizations are very white, the later ones are sometimes somewhat colored. From the benzin, used for the extraction and in which there is yet remaining a certain amount of cumarin, the latter can be separated by repeatedly shaking the same with a diluted sodium hydrate solution, for instance with one of 5%. The alkaline solution is then neutralized with hydrochloric acid, the precipitate collected after some time on a filter and dried.

When mixing the alkaline solution of cumarin with acid, the same turns turbid and milky; small globules of cumarin have appeared, which, however, after a short time change their shape, then representing needle-shaped crystals. To observe this very interesting transformation, the use of a microscope is highly recommendable.

* Dr. Clemens Kleber calls attention to the fact that petroleum ether frequently contains impurities characterized by a persistent disagreable odor. Wherever petroleum ether is used, care should be exercised in selecting a pure article or to purify the solvent. For this reason alcohol is as a rule preferably used for the recrystallization of odoriferous substances. It is conceded, however, that it is more difficult to obtain a perfectly white product when alcohol is used as solvent, especially when working with small quantities. The cumarin of commerce is to-day almost exclusively the artificial compound, which is cheaper and not likely to be mixed with fragments of tonka leaves etc. It might be well to add that a good Bohemian flask may be substituted with safety for the copper distilling-vessel suggested and that the use of an upright or reflux condenser may be used to advantage. Ed.

TRANSLATIONS.

Reagents and Reactions known by the Names of their Authors.*

Based on the original collection by *A. Schneider*, revised and enlarged by Dr. *Julius Altschul.*

Persoz's solution for distingnishing textile fibres is prepared by shaking a solution of 10 g. zinc chloride in 10 g. water, with 2 g. of zinc oxide. Upon digesting any fabric in this basic zinc chloride solution at 30°—40°, any silk contained therein is dissolved.

Pettenkofer's reaction for biliary acids. Upon adding cane sugar and concentrated sulphuric acid to a solution of biliary acids (in the urine), an intense purple coloration is produced.

Strassburg's modification. Dissolve some cane sugar in the urine, saturate filter paper with this solution, and after drying, bring the paper in contact with a drop of sulphuric acid. The red color is then to be observed in translucent light.

Drechsel's modification consists in the use of phosphoric acid (instead of sulphuric acid) and warming.

Udransky's modification. Instead of cane sugar and sulphuric acid, furfurol-sulphuric acid is employed.

See also *Neubauer's* test.

By reversing the process, *Pettenkofer's* reaction can also be employed in testing for sugar; e. g., in glucosides. See *Brunner's* reaction for digitalin.

Piria's tyrosin reaction. The sediment from the suspected urine is warmed with a little concentrated sulphuric acid, diluted, neutralized with calcium carbonate, and the filtrate treated with ferric chloride solution. If tyrosin was present, the solution is colored violet.

According to *Piria-Staedeler*, the urine sediment is warmed with a little concentrated sulphuric acid, the solution diluted, neutralized with barium carbonate, boiled, filtered, and added, drop by drop, to a dilute solution of ferric chloride.

Planta's alkaloid reagent. See *Mayer's* reagent.

Plugge's phenol reaction. A dilute phenol solution is rendered intensely red when boiled with mercuric nitrate solution containing a trace of nitrous acid. At the same time metallic mercury separates out, and an odor of salicylol is developed. Compare *Fresenius'* phenol reaction.

Plugge's reagent yields with albumen a red color similar to the one produced with *Millon's* reagent.

Plugge's reagent for gum ammoniac. 30 g. caustic soda are dissolved in water, the solution kept cool during the addition of 20 g. bromine, and then diluted to one liter. A drop of this solution, when added to an aqueous or alcoholic solution of gum ammoniac prepared with the addition of dilute soda lye, immediately causes a rapidly disappearing, beautiful violet color.

Podwyssotzki's reaction for emetine. With a drop of a saturated solution of sodium phospho-

* Continued from Vol. 15, p. 13.

uranate, emetine yields a brown coloration which turns to blue upon the addition of a drop of hydrochloric acid.

Pollaci's phenol reaction. Phenol turns brown upon treatment with chromic acid mixture.

Posner's reaction for peptone and albumins in urine. After rendering the urine alkaline, it is poured into a test-tube and a layer of very dilute, almost colorless copper sulphate solution carefully poured on. Peptone causes the formation of a violet zone even in the cold; albumin gives the same reaction upon warming.

Compare *Brücke's* and *Rose's* biuret reaction.

Poutet's reaction for fatty oils (elaidin reaction). Pour 10 g. of oil, 5 g. nitric acid (40—42° Bé), and 1 g. mercury into a test-tube, dissolve the mercury by shaking for three minutes, allow the mixture to stand 20 minutes, and again shake for a minute. Various fats show differences in color, and in the ease with which they solidify. Olive oil and peanut oil harden most rapidly.

According to other authorities, 50 ccs. of the oil are mixed with 12 g. mercury and 15 g. nitric acid (sp. gr. 1.35), by which treatment only olive oil and oil of almonds are solidified, all other oils remaining liquid.

Pradine's reagent for foreign coloring matters in wine is a saturated solution of ammonia gas in ether. Upon shaking this solution with wine, the foreign coloring matters are dissolved in the ether.

Preyer's test for carbon monoxide in the blood. 3—4 drops of the suspected blood are warmed for 5 minutes at 30° C. with 10 ccs. water and 5 ccs. potassium cyanide solution (1:2). While the spectrum of normal blood, when treated as above, looses the absorption line of oxy-hæmoglobin, and in its place shows a broad absorption band, the spectrum of carbon monoxide blood remains unchanged.

Payer's hydrocyanic acid reaction. The reagent employed is a very dilute alcoholic tincture of guaiac resin, containing a trace of copper sulphate solution. Upon approaching this mixture, contained in a porcelain capsule, with a glass rod moistened with hydrocyanic acid, blue lines are formed in the liquid; upon stirring, the whole solution turns blue. Compare *Schönbein* and *Pagenstecher's* reaction.

Prollius' solution for extracting cinchona bark (for the determination of alkaloids) is a mixture of 88 p. ether, 8 p. absolute alcohol, and 4 p. water of ammonia.

Purdy's solution for estimating glucose contains 4.15 g. copper sulphate, 10 g. mannite, 20.4 g. caustic potash, 300 ccs. ammonia water (sp. gr. 0.88), 50 g. glycerin, and enough water to make 1 liter. 25 ccs. of this solution are reduced by 0.015 g. grape sugar.

Compare *Fehling's* solution.

Puscher's test for alcohol in ethereal oils. Into the bottom of a test-tube introduce a few drops of the ethereal oil and dust the upper portion of the tube with powdered fuchsin, or introduce the latter by means of a swab of cotton. Upon boiling, the alcohol evaporates first and dissolves the fuchsin to a red solution.

Rafaële's modification of *Spiegler's* reagent, (q. v.)

Raspail's reaction for albumens. These are colored red by sugar and concentrated sulphuric acid.

Compare *Schultze's* furfurol reaction.

Reich's reaction for cane sugar. Solutions of cane sugar when treated with cobalt nitrate solution yield a violet coloration upon the addition of soda lye. According to *Dupont*, this reaction is not interfered with by glycerin, milk sugar, glucose, or invert sugar; however, dextrin and gums should be removed by precipitation with lead acetate or baryta water.

Reichardt's test for arsenic in the urine. 200 ccs. of urine are concentrated with about 2 g. of caustic soda, the residue dissolved in a little water, acidulated with hydrochloric acid, and then tested in a *Marsh's* apparatus.

Reichardt's reaction for nitric acid (brucine reaction). Upon treating a solution of brucine in concentrated sulphuric acid, with a few drops of a solution containing nitric acid, a rose-red to deep red coloration appears. This reaction takes place even in dilutions of 1:100,000.

Reichert-Meissl's number indicates the number of ccs. of deci-normal sodium or potassium hydroxide solution necessary to neutralize the volatile fatty acids obtained from 5 g. of a fat, when operating according to a definite special method. The *Reichert's* numbers formerly in vogue gave the figures for 2.5 g. of fat, and are therefore only half as large as the *Reichert-Meissl's* numbers.

Reichl's test for glycerin. Equal parts of glycerin, phenol and sulphuric acid are mixed and heated to 120°. After cooling, water is poured upon the brownish-yellow solid mass and ammonia added drop by drop, whereby the mass is dissolved to form a beautiful carmine-red solution.

Reichl-Mikosch's reagent for albumens consists of benzaldehyde and sulphuric acid containing ferric sulphate.

Reinsch's arsenic test. A solution of arsenous or arsenic acid in hydrochloric acid is reduced by metallic copper. A gray coating of copper arsenide is formed upon the metal. Antimony and mercury behave similarly; their absence must therefore be proved before the presence of arsenic can be decided upon. This test is also known as *Hager's* empirical arsenic test (kramato method).

Remak's solution for hardening microscopical preparations is a mixture of 50 ccs. aqueous copper sulphate solution (20 p. c.), 50 ccs. alcohol (25°), and 35 drops purified wood vinegar.

Renard's test for peanut-oil depends upon the isolation of arachic acid (melting point 74–75°) by means of the lead salt, which can be separated from lead oleate by extraction with ether. For particulars see Chem. Ztg., 1895, p. 451.

Reuter's test for *p*-amidophenetol in phenacetin. The phenacetin is melted with pure chloral hydrate; if a violet color appears, amidophenetol was present. (Even the purest commercial specimens show a slight rose tint.)

Reynold's test for acetone in the urine. The distillate from the urine is shaken with freshly precipitated mercuric oxide (from mercuric chloride and potassium hydroxide). If acetone was present, the filtrate will contain acetone-mercury in solution and will respond to the tests for mercury.

Rheoch's test for free mineral acids. See *Mohr's* test.

Richardson's reaction for *α*-naphthol. 0.04 g. of naphthol and 0.5 ccs. of normal sodium hydroxide solution are dissolved in 1—2 ccs. of water. Hereto is added a mixture of 0.05 g. sulphanilic acid dissolved in 5 ccs. normal sodium hydroxide

solution, and 0.02 g. sodium nitrite dissolved in 5 ccs. normal sulphuric acid. α-naphthol under these conditions yields a dark blood-red color, which changes to brown upon the addition of dilute sulphuric acid; β-naphthol causes only a reddish-yellow color.

Richmont's test for nitric acid. Mix the solution to be tested with concentrated sulphuric acid, cool, and pour on top a layer of ferrous sulphate solution. A purple to brown color indicates nitric acid.

Also called *Desbassin's* reaction.

Riegler's reagent for albumens is asaprol (calcium naphtholsulphonate). Albumens, albumoses, peptone, and pepsin are precipitated by this reagent in acid solutions, but the precipitates formed with the latter three dissolve upon warming.

Rinnmann's zinc test. When zinc oxide after moistening with cobaltous nitrate solution is strongly heated on charcoal, a green color results.

Ripart's solution, a mounting-medium for microscopy, consists of 75 p. camphor water, 75 p. distilled water, 1 p. glacial acetic acid, 0.3 p. cupric acetate, 0.3 p. cupric chloride.

Ritsert's glycerin test. Upon heating 1 cc. glycerin to boiling with 1 cc. of ammonia water, and then adding 3 drops of a 5 p. c. silver nitrate solution, no change should occur in the liquid within 5 minutes.

This test was intended to show the presence of arsenous oxide, as well as of acroleïn and formic acid; recent work however seems to have proved the test fallacious.

Ritsert's reaction for phenacetine. 0.1 g. phenacetine is boiled for a minute with 1 cc. concentrated hydrochloric acid, then diluted with 10 ccs. of water, filtered after cooling, and the filtrate treated with 3 drops of 3 p. c. chromic acid solution, whereupon the liquid gradually assumes a ruby-red color.

Ritsert's sulphonal reaction. Upon heating sulphonal with gallic or pyrogallic acid, the odor of mercaptan appears.

Robert's test for albumen. Upon pouring the suspected urine in a layer upon a concentrated solution of sodium chloride in 5 p. c. hydrochloric acid, a white zone will appear if albumen is present.

Robinet's morphine reaction. A neutral solution of a morphine salt, when treated with a dilute solution of ferric chloride containing some oxychloride, assumes a rapidly disappearing, blue color.

Roch's test for albumen in the urine. A salicylsulfonic acid solution yields a precipitate with albumen.

Rose's biuret reaction for albumens. If a solution of an albumen is rendered alkaline with soda lye, and a dilute copper sulphate solution (17—18 g. crystallized cupric sulphate in 1 litre of water) added drop by drop with constant shaking, the solution assumes first a rose-red, then a violet, and finally a blue color, which latter appears of a decided reddish tint when compared with a normal alkaline copper solution.

Compare *Brücke's* biuret reaction and *Posner's* reaction.

Rosenbach's test for biliary coloring matter. Upon the careful addition of a few drops of 5 p. c. chromic acid solution, urine containing biliary pigments is said to turn green. Upon adding more of the test solution, a brown color appears.

See also *Rosenbach's* modification of *Gmelin's* test.

Rosenstiel's aniline reaction. See *Runge's* aniline reaction.

Rosin's test for coloring matter from the bile. Pour a few cubic centimeters of dilute iodine solution in a layer upon the suspected urine. In the presence of biliary pigments, a green ring forms.

Rossbach's test for poisons consists in testing the action of alkaloids upon infusoria. The intensity of the action depends upon the degree of dilution.

Roth's reagent for fatty oils. Sulphuric acid of sp. gr. 1.4, saturated with nitrous fumes and mixed with the oil to be tested, gives different results as regards color and solidification, depending upon the nature of the oil.

Compare *Poutet's* elaidin reagent.

Roussin's crystals. Nicotine in ethereal solution yields with an ethereal iodine solution an oily mass, from which ruby colored crystals, reflecting dark blue, gradually separate.

De la Royère's reaction for fatty oils. A few drops of the oil to be tested are treated with two drops of a fuchsin solution to which just enough alkali has been added to decolorize it. Fatty oils when so treated cause a red coloration, due to the free acids which they contain. According to *Halpher* this test has only a limited value, since mineral oils may also contain acids. On the other hand, the acids of the fats, e. g., in lubricators, might be neutralized by alkaline soaps. The presence of soaps, however, could be easily proved by a solution of Congo-red just colored violet by hydrochloric acid; such a solution turns red with soaps.

Rubner's reaction for glucose and milk sugar. The solution to be tested is treated with lead acetate and ammonia, and warmed. In the presence of the above named sugars, a red precipitate results.

Runge's aniline reactions.

a) Aniline solutions, in the absence of ammonium chloride, yield with chlorinated lime solutions a purple-red color, which changes to rose-red upon the addition of acids.

According to *Rosenstiel's* modification, in case the aniline is impure, ether is added after admixture of the chlorinated lime solution; this takes up the brown product formed, so that the aqueous solution remains of a pure blue color.

b) A pine shaving, moistened with a dilute solution of an aniline salt, is colored yellow.

Runge's reaction for cane sugar. Sugar is blackened upon concentrating it with dilute sulphuric acid. Of course, many other organic substances act likewise.

Sachsse's solution for determining grape-sugar contains 18 g. mercuric iodide, 25 g. potassium iodide and 80 g. potassium hydroxide per litre. The modified

Sacchse-Heinrich's solution contains only 10 g. potassium hydroxide for the above quantities. The grape-sugar solution (which should be about 5 p. c. strength) is added to the boiling reagent until all the mercury salt is reduced. As an indicator hydrogen sulphide is used, being added to a small portion of the solution after acidulating with acetic acid. 40 ccs. of the reagent are reduced by 0.1342 g. grape-sugar. (Concerning the reduction numbers of other sugars see Pharm. Centralh. 21, p. 211.)

Salkowsky's test for peptone in the urine. 50 ccs. of urine are acidulated with hydrochloric acid and phospho-uranic acid added. The precipitate formed is washed, warmed on the water-bath, dissolved with a little soda lye, and a few drops of 1—2 p. c. copper sulphate solution added. In the presence of peptone, a red color appears.

Salkowsky's test for carbon monoxide in the blood. Mix the suspected blood with 19 p. water and add an equal volume of soda lye (sp. gr. 1.34). If the blood contains carbon monoxide the mixture becomes turbid, at first whitish, then light red; after some time, red flakes separate out on the surface of the rose-colored liquid. Normal blood is colored a dirty brown by soda lye.

Salkowsky's cholestrin reaction. The substance to be tested, e. g., lanolin, is dissolved in chloroform and the solution shaken with concentrated sulphuric acid. In the presence of cholesterin, the chloroform becomes blood-red while the sulphuric acid assumes a greenish fluorescence. The reaction can also be applied as a zone-reaction, in which case the presence of cholesterin causes a brownish-red zone.

This reaction was first mentioned by *Hager*.

Salkowsky's phenol reaction. Phenol solutions are colored blue or greenish by the addition of ammonia and a few drops of chlorinated lime solution.

Salkowsky's reaction for creatinin. See *Weyl's* reaction.

Sandlund's test for iodine in the urine. 5ccs. of urine are treated with 1 cc. sulphuric acid (1:5) and 2—3 drops of sodium nitrite solution (1.0 g. in 500 ccs.), and shaken with carbon bisulphide. In the presence of iodine (up to 0·001%), the carbon bisulphide becomes colored.

Schaefer's quinine test (oxalate test). 1.0 g. crystallized or 0.85 g. anhydrous quinine sulphate are dissolved in 35 ccs. of boiling water, whereupon a solution of 0.3 g. crystallized neutral potassium oxalate in 5 ccs. of water are added, and the whole made up with distilled water to 41.3 g. The vessel is now placed for half an hour into a water-bath of 20° C., shaking occasionally, and finally filtered through glass-wool. If the quinine was free from allied alkaloid, no turbidity should be produced upon the addition of a drop of caustic soda solution to 10 ccs. of the filtrate.

Schaefer's test for cinchonidine in quinine sulphate (tetrasulphate test), depends upon the slight solubility of cinchonidine tetrasulphate in alcohol. 1 g. quinine sulphate is dissolved in 9 g. absolute alcohol and 3 g. 5% sulphuric acid. After allowing this solution to stand for a day with occasional shaking, any cinchonidine present will have separated out as tetrasulphate. Upon dissolving this precipitate in water and precipitating with caustic soda solution, pure cinchonidine of melting point 199° C. can be obtained.

Schaefer's reaction for identifying nitrites in the urine. 3—4 ccs. of urine are decolorized with animal charcoal, and then treated with an equal volume of diluted acetic acid (1:10) and 2 drops of 5% potassium ferrocyanide solution. The solution is colored yellow if nitrites were present.

Schaefer's test for naphthol-yellow in cakes, pastry, etc. 10—20 g. of the material to be tested are broken up into crumbs and warmed with 40 ccs. of alcohol (50—60% by vol.). Naphthol-yellow colors the alcohol yellow; upon addition of hydrochloric acid this color disappears, while that produced by saffron would remain.

Schaffgot's solution for precipitating magnesia without the addition of fixed alkalies consists of 235 g. ammonium carbonate and 180 ccs. ammonia water (sp. gr. 0.92), diluted to one litre.

Schaer's test for blood. See *Hühnefeld's* turpentine solution.

Scheele's reagent for arsenous acid in a solution of copper sulphate in an excess of ammonia water; this produces a light-green precipitate with arsenites.

Scheibler's reagent for alkaloids in phosphotungstic acid, which produces precipitates similar to those caused by phospho-molybdic acid. (*Sonnenschein's*, *Jungmann's*, *De Vry's* reagent). The reagent is prepared by dissolving 100 g. sodium tungstate and 60—80 g. sodium phosphate in 500 ccs. of water acidulated with nitric acid; or according to *Otto*, by simply adding phosphoric acid to a solution of sodium tungstate.

Schell's reagent for cocaine. Upon mixing cocaine hydrochlorate with calomel and moistening with a little water, (even breathing upon the powders is sufficient), the mixture will be blackened by partial reduction of the mercury salt. Compare *Lenz's* reaction for pilocarpine.

Scherer's test for inosite. Upon evaporating an aqueous solution of inosite almost to dryness with nitric acid, treating the residue with ammonia and a trace of calcium chloride, and again concentrating, a rose-red solution results.

Scherer's test for brucine. Upon carefully evaporating bencine to dryness on platinum foil with nitric acid, and warming the residue with caustic soda solution, a yellow liquid remains which upon further heating forms an oily drop.

Scherer's test for phosphine in the excreta in phosphorus poisoning depends upon *Hager's* test (g. v.) by means of silver nitrate paper.

Schiff's cholesterin reaction. If cholesterin is mixed with concentrated sulphuric acid and then ammonia water added, a red coloration appears.

Schiff's uric acid reaction. An alkaline uric acid solution reduces silver nitrate or silver carbonate. Moisten filter-paper with silver nitrate solution, touch the moistened spot with a little dilute solution of sodium carbonate, and dip the paper so prepared into the solution to be tested. A black spot will appear if uric acid was present.

Schiff's test for urea. If a solution of urea (urine) is treated with furfurol and hydrochloric acid, a violet color is produced; upon standing, an insoluble brown mass separates out.

Schiff's reagent for aldehydes is fuchsin-sulphurous acid. See *Guyon's* reagent.

Schlagdenhauffen's reagent for distinguishing alkaloids from glucosides is a mixture of equal parts of a 3% solution of guaiac resin and a saturated mercuric chloride solution. Only alkaloids give a precipitate with this reagent in the cold or at 60—79° C.

Schlickum's arsenic test. Upon pouring the suspected solution in a layer upon a solution of 0.02 g. sodium sulphite and 0.4 g. stannous chloride in 3—4 g. concentrated hydrochloric acid, a yellow zone appears if arsenic is present.

(To be continued.)

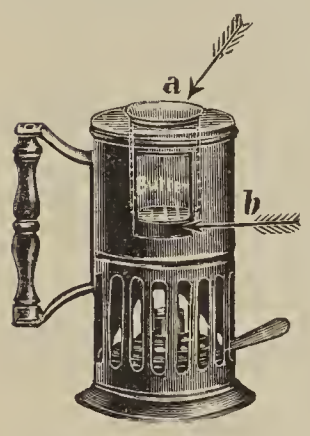
MONTHLY REVIEW.

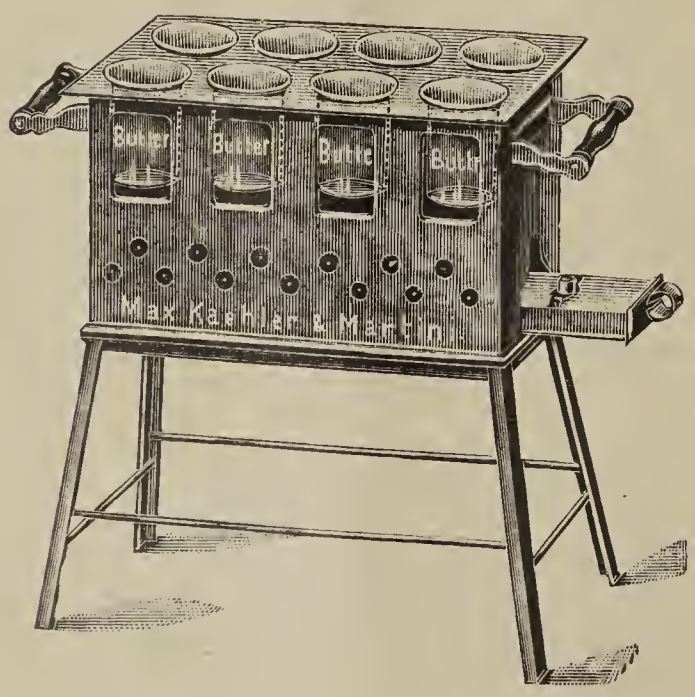
Pharmaceutical Technique.

A New Butter-tester.

The following, taken from the "Central-Blatt für Nahrungs- und Genussmittel-Chemie, sowie Hygiene" is a description of a very simple apparatus for testing butter for oleomargarine, constructed by Dr. B. Alexander-Katz of Görlitz, Ger.

The method of examination is based upon the observation that even slight additions of oleomargarine cause butter to become so apaque after twice melting, that a mark on the containing vessel cannot be distinguished through the molten fats. In the ordinary forms of apparatus used to test the purity of butter by melting, the layman finds difficulty in noticing the slight turbidity produced by small additions of oleomargerine. In Dr. Katz's tester the word "Butter" is burned into the glass with blue color. After melting the suspected butter twice, you observe through a slit whether the word "Butter" is distinctly visible in the light reflected from the shining metallic walls of the apparatus. With pure butter, even when old or rancid, the letters are usually distinctly legible, while this is not the case in the presence of but slight traces of oleomargerine.





The apparatus can be obtained from Max Kaehler & Martini, Berlin. The simplicity as well as the low cost of Katz's tester would recommend it especially for commercial purposes, where it is desired to identify the adulterated specimens of butter rapidly and without cost.

Chemistry.

Volumetric Determination of Acetone.

In the Moniteur Scientifique of 1893, 41, 4 Serie, Vol. 7, 1°, p. 272—274, MM. J. Robineau and G. Rollin publish a paper entitled "Dosage Volumetrique de L'Acetone." Dr. E. R. Squibb has recently reported on an improvement of the process whereby it is rendered easier, more simple, quicker, and better adapted to technical uses, whilst still sufficiently accurate for most purposes.

The solutions used by Dr. Squibb are the following:

1. A standard solution of acetone containing one-tenth gram of acetone in 10 ccm. of solution.

2. A liter of solution of potassium iodide containing 2.5 grams of the iodide in 10 ccm. of the solution.

3. Solution of sodium hydroxide: Of commercial caustic soda, purified by alcohol, 257 grams are dissolved in distilled water, the solution made up to one liter, and set aside until it settles quite clear. Then 850 cc. of clear solution are poured off and added to the solution of potassium iodide, making 1,850 cc. of total solution.

Of this solution 20 cc. are taken for each titration.

The remainder of the soda solution is again allowed to settle clear for farther use in the hypochlorite solution.

4. Solution of sodium hypochlorite. The officinal solution of chlorinated soda to a liter of which 25 ccm. of the above described clear soda solution are added.

If there be much of this titration to do it is very convenient to fit this bottle with an automatic zero burette, as shown in the accompanying illustration, this form being, so far as is known, original with the writer and very convenient for general rapid working with a burette. The advantage is, beside that of rapid and easy working, that it does not require a special burette and is easily fitted up from the resources of any laboratory.

5. Bicarbonated starch solution prepared as follows:

Starch, 0.125 gram, is mixed with five cc. of cold water, and then added to twenty cc. of boiling water and boiled. When cold two grams of sodium acid carbonate are added and stirred until dissolved. Kept in a colorless bottle this solution does not sensibly diminish in delicacy or reaction in three months. But for how much longer it would remain good for this reaction was not tried.

The Titration. The burette being filled with the solution of sodium hypochlorite, ten cc. of the standard solution of acetone (equal to one-tenth gram of acetone) is measured into a beaker of about fifty cc. capacity, and twenty cc. of the mixed solution of iodide and soda are added and stirred well. Into this the hypochlorite solution is passed in rapid dropping, with constant stirring, until eight or ten cc. have been run in. Then the precipitated iodoform is allowed to settle out, and a drop or two more hypochlorite are added. Should this produce a dense cloudiness, one-half cc. more hypochlorite is added, and well stirred and again allowed to settle. Then a drop or two more of hypochlorite are added. If there should still be a cloudiness, another one-half cc. of the hypochlorite is added and well stirred, and so on until the cloudiness is very slight. Then the starch testing begins.

A small drop of the liquid is transferred by a rod to a white porcelain tile or plate, and a similar small drop of the starch solution is placed very near it. Then with the first rod the drops are made to connect by a fine line, so that the whole has a dumb-bell form. If there be no blue color, one or two-tenths cc. more of the hypochlorite is added and well stirred, and the testing is repeated until finally a blue line will be seen at the moment of contact of one drop with the other. If the last negative testing has taken 10.4 cc. from the burette, and this positive testing, which has given the blue line, required 10.6 cc., then the accepted reading would be 10.5 cc., and this would be the hypochlorite equivalent of one-tenth gram of acetone. If the blue line be very faint, it will be momentary only, and will indicate that the excess of hypochlorite is very small, and that 10.6 cc. is a closer reading than 10.5, but the process is not sufficiently accurate to take much account of such differences, since even with much experience and great care it is hardly practicable to get any two titrations to agree within one-tenth cc. of hypochlorite.

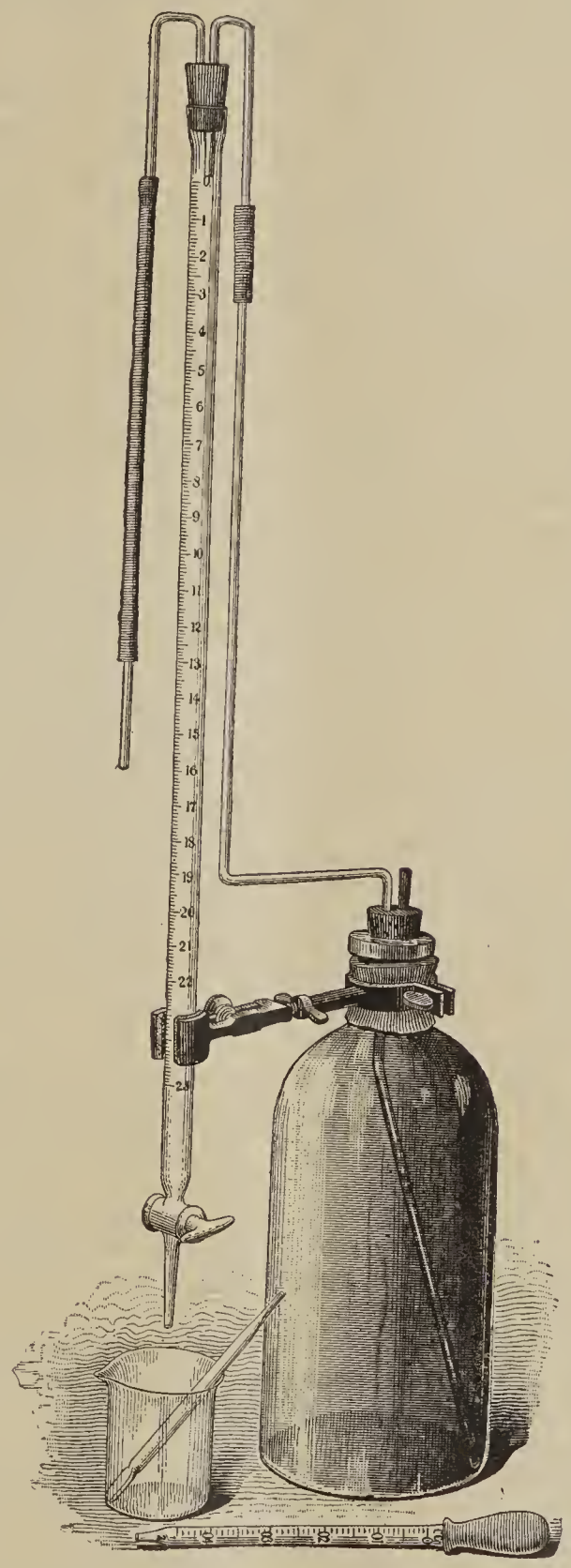
Having then 10.5 cc. as the hypochlorite equivalent of one-tenth gram of acetone at this time, it is easy to estimate any smaller or larger quantity of acetone that requires a smaller or larger quantity of the hypochlorite by the equation $10.5 : 0.1 :: a : x$.

But this hypochlorite solution is liable to diminish in strength by keeping, and therefore must be standardized by this standard acetone solution as often as the accuracy of the determinations may require. At times the change in strength is scarcely perceptible from day to day in several successive day's work, but in standing for a week or two there will always be a falling off in strength to the extent of one-tenth to five-tenths cc. in the hypochlorite. The addition of the soda solution appears to render the hypochlorite more permanent, just as the sodium bicarbonate renders the starch solution more permanent. But in the case of the starch the blue reaction does not occur if the bicarbonate be not present.

The titration of the acetone present in unknown dilutions requires first that the strenght should be estimated by known conditions or by sensible properties, in order to keep the proportions of the reagents and the dilutions approximately the same, or at least not differing very widely when close determinations are required. If then the taste and smell should indicate that the acetone to be tested is below twenty-five percent, four-tenths cc. may be taken for the testing. If over twenty-five percent and under fifty percent, two-tenths cc. may be taken. If over fifty percent, one-tenth cc. is sufficient.

For the adjustment of these small quantities with a sufficient degree of accuracy for rapid technical working, it is convenient to have a five-tenths cc. pipette divided in 0.01 cc. fitted with a rubber bulb, as shown in the illustration. By screwing the neck of this bulb up or down upon the glass, with the point in the liquid, close measurements may be quickly made.

A beaker of fifty cc. capacity containing ten cc. of water is weighed and the weight noted. The four-tenths, two-tenths, or one-tenth cc. of the sample to be titrated is delivered in the water and the weight again taken to give the quantity of the sample taken for the titration. Then the twenty cc. of the iodide and soda solution is added, the whole well stirred, and the hypochlorite dropped in, and the end reaction managed precisely as described in standardizing the hypochlorite, and the quantity of hypochlorite used is noted. Then as 10.5 cc. of the hypochlorite is used to one-tenth gram of acetone, so is the quantity of hypochlorite now



used to the quantity of acetone present in the portion of the sample taken for titration. Then as the weight of this portion taken for titration is to the quantity of acetone found in it, so is 100 to the percentage of acetone in the sample.

For example, a sample supposed to be not far from absolute is to be titrated. A fifty cc. beaker with ten cc. of water weighs 25.283 grams; with one-tenth cc. of the sample added the weight becomes 25.360 grams, giving 0.077 gram as the weight taken for the titra-

tion. To this is added the twenty cc. of iodide and soda solution, and the mixture being well stirred, the hypochlorite is dropped in to saturation when seven and nine-tenths cc. is found to have been used. Then as 10.5 is to one tenth, so is seven and nine-tenths to 0.0752 gram of acetone in the 0.077 gram of the sample taken. Then as 0.077 gram of the sample taken is to the 0.0752 of acetone indicated, so is 100 to 97.66 percent of acetone in the sample.

This is the rationale of the operation, but the calculation is shortened by simply dividing the standard hypochlorite (10.5 cc.) into the hypochlorite required (seven and nine-tenths cc.) to get the corresponding acetone (0.0752 gram), and then dividing the weight of the sample taken (0.077 gram) into the weight of acetone obtained from it (0.752 gram) to get the percentage proportion of the acetone (97.66 percent.).

Of course the method of definite dilution, and the titration of an aliquot part, as described in the original paper of Robineau and Rollin (see translation) is available and more accurate than that here recommended, and takes but little more time.

Where acetone is made, or is much used, and especially in processes where it is recovered by distillation to be used over again, there is often much need of testing the strength of very weak dilutions, and of knowing when acetone is absent. In many such uses accuracy is not required and rough estimates are sufficient. For work of this kind, especially when the strength is below ten percent, the weighing of the sample to be tested may be omitted, because the specific gravity is so nearly that of water that the measure may be accepted as cubic centimeter for gram.

Determination of acetone in the presence of ethyl alcohol. The standard dilution of acetone containing ten grams in the liter was used, and ten cc. of this required 14.3 cc. of the hypochlorite solution. On repetition 14.4 cc. was required.

A dilution of ethyl alcohol was made containing ten grams in the liter, and ten cc. of this requires one-tenth cc. of the hypochlorite. On repetition 0.125 cc. was required.

To ten cc. of the acetone dilution two-tenths cc. of the alcohol dilution was added, and this mixture required 14.4 cc. of the hypochlorite solution. On repetition 14.4 cc. again was required.

To ten cc. of the alcohol dilution two-tenths cc. of the acetone dilution was added, and this mixture required 0.35 cc. of the hypochlorite. On repetition four-tenths cc. was required.

In each case ten cc. of the iodine and soda solution was used and all other conditions were kept fairly uniform.

In the case wherein the hypochlorite was added to alcohol alone no precipitate or cloudiness was visible, although 0.1 to 0.125 cc. was required to obtain the starch reaction. When acetone had been added to the alcohol one-half this quantity of the hypochlorite was sufficient to give decided cloudiness.

These results appear to confirm the conclusions of Robineau and Rollin to the effect that the presence of ethyl alcohol has no effect upon the titration of acetone by this method, although ethyl alcohol is an iodoform-yielding substance. The small quantity of hypochlorite required to obtain the starch reaction when alcohol alone was titrated was probably in consequence of traces of impurity in the alcohol.

[Journ. Am. Chem. Soc., No. 12, 1896].

Botany and Pharmacognosy.

Salvia officinalis.

Attention has recently been called to the therapeutic value of this once famous remedy. Krahn studied its therapeutic effect on 38 patients of the Greifswald clinics in cases of hyperhydrosis. Of the 38 only two were not effected. Of the 36, of whom 29 were phthisic patients, the profuse perspiration ceased or was diminished. It again set in upon non-administration. The tincture was employed in doses of about twenty drops three times daily.

[Therap. d. Geg. 37, p. 733; from Centralbl. f. innere Med., 1896, 38.]

Adulteration of Cinnamon with Cane Sugar.

Dr. Rudolf Hefelmann finds cane sugar much used to adulterate powdered cinnamon. The sugar, he believes, is added in order to mask a considerable addition of sand. Since the sugar does not appear in the ash determinations, the full ash allowed can be made up by the addition of sand. The detection of cane sugar offers no difficulties since aqueous extracts of cinnamon specimens containing no sugar are never dextrogyrate, Ceylon cinnamon giving rather a slight turn to the left because of its greater content of invert sugar. For the details of the rather complicated process, the reader is referred to the original article.

[Pharm. Centralb. 17, p. 699.]

Amanita Poisoning.

In a recent paper on fungi, edible and poisonous, Charles M. Ilvaine discusses the genus *Amanita* of the *Agavicini* or gilled fungi.

The genus *Amanita* contains not over thirty species of which number eight are deadly to man, the remaining ones being either edible or not capable of producing death. Of the eight fatal species, a piece as large as a pea is sufficient to cause death. The symptoms of amanitine poisoning do not appear until eight or ten hours after eating, when a gray pallor, faint breath, thickened tongue and violent retching follow. The poisonous principle acts as a narcotic and affects the nerve centers, especially those controlling the heart. On the first symptoms, a hypodermic rejection of $\frac{1}{90}$ grain of atropine is administered and continued until $\frac{1}{20}$ grain has been given or the patient is cured. Emetics are worse than useless. No test or method of cooking either destroys or makes possible the detection of the toxic principle.

[Am. Journ. Pharm., 68, p. 651].

Indian Podophyllum.

Professor Wyndham R. Dunstan, Director of the Scientific and Technical Department of the Imperial Institute, in a preliminary note printed in the Institute journal, gives some results of the examination of the constituents of *Podophyllum emodi* commenced in the Research Laboratory of the Pharmaceutical Society by

Mr. T. A. Henry and now in progress. The podophyllin of the Indian root is much lighter than that made from *Podophyllum peltatum* owing to the larger quantity of podophyllotoxin which it contains (30 p. c.). The commercial American resin contains on an average about 20 p. c. The medicinal action of the Indian resin has been investigated by Dr. H. W. G. Mackenzie, of St. Thomas' Hospital, who finds that the two resins are identical in their medicinal effects, and that, therefore, there is no reason why the resin obtained from the Indian root should not be substituted for the American resin. *Podophyllum emodi* yielded from 9 to 12 p. c. of resin; *Podophyllum peltatum* gave from 4.2 to 5.5 p. c. Results thus far obtained indicate that podophyllotoxin can no longer be regarded as the chief active principle of the resin.

[Chemist and Druggist, 49, p. 827.]

Practical Pharmacy.

Citruria.

Under this name Radlauer's Kronen-Apotheke of Berlin brings into the market tablets which are said to consist of urea, citric acid, and lithium bromide.

[Pharm. Centrh. 37, p. 816.]

Aluminium oleinicum.

This is an ethereal solution of aluminium oleate. Upon the addition of an alum solution to a solution of an oil soap a sticky mass is precipitated, which is triturated with warm water and while still moist is dissolved in ether. It is intended to have this preparation take the place of traumaticin, a concentrated solution of gutta percha in chloroform.

[Pharm. Post, 29, p. 540.]

Concentrated Solution of Hydriodic Acid.

Sharp & Dohme of Baltimore, Md., have placed upon the market a 10% solution of hydriodic acid for the extenporaneous preparation of syrup of hydriodic acid of any strength. By using this preparation, the pharmacist is to avoid the loss and annoyance due to the deterioration of this syrup upon standing, either by the liberation of iodine or discoloration of caramel, caused by the action of the acid on the sugar. The manufacturers claim that their concentrated solution of hydriodic acid will keep indefinitely, even if exposed to the light and in partially filled bottles, but do not state what has been added to secure this stability.

Egg Emulsion of Cod Liver Oil.

It is a well known fact that most of the cod liver oil emulsions on the market contain less than 40% of acid, the remaining 60% or upward being made up of gum Arabic, Irish moss, and other emulsifying and flavoring agents, which not only add nothing to the therapeutic value of the emulsion, but retard its beneficial action by untoward effects on the digestive organs.

Egg emulsions have long been recognized as far superior to the class above referred to, but the lack of permanency has heretofore proven an apparently insuperable obstacle to their success.

Parke, Davis & Co. now announce that they have secured a stable formula (L. B. Hewitt's), which enables them to incorporate fully forty percent of cod liver oil with no other emulsifying agent than eggs, and no other flavoring than brandy. Their claims for the preparation are: perfect emulsification; remarkable nutritive properties; palatability; permanency under ordinary conditions of storage; miscibility with water, milk, wine, etc.; and standard strength of forty percent by volume.

New Remedies.

Just what constitutes a new remedy it is by no means easy to state. No doubt any or every definition that might be attempted would include the host of new organic chemicals that are annually thrust as it were upon the market by chemical manufacturers. In fact, a new vegetable or animal drug or even a new mineral water might legitimately be included under this title. The term, however, has been used in a broader sense. Vegetable drugs that have been obsolete for generations have been revived. They may have been in use as domestic remedies in some part of the world, but the discovery of some new therapeutic application makes them a "new remedy". An organic chemical may have served its purpose as reagent or solvent for years without having been found useful in medicine. The discovery of some peculiar physiological property, or the discovery of a means of application of a well-known physiological property at once stamps it as a "new remedy." Even urea, the first organic compound synthesized, is to-day a "new remedy" as *urea pura*. Vegetable drugs that have been used not only as household remedies, but have been employed for generations by the medical profession of one country, become "new remedies" to-day or to-morrow in some country in which they were known before principally as scientific curiosities.

This usage has led to the introduction of the term newer remedies. Whether the use, misuse or abuse of this term will ultimately lead to the introduction of the superlative of this attribute remains to be seen.

The importance of supplying information with regard to these "new" or "newer" remedies has been recognized by almost all pharmaceutical journals. The carelessness with which such journals frequently are compiled has led to very unreliable and even ridiculous statements. Thus, e. g., a desinfectant prepared by the U. S. Army laboratory and by E. R. Squibb and used during the war in the early sixties was described (14, p. 107) under its historic name *chlorinium* as an interesting war relic now in possession of the historical cabinet of the University of Wisconsin. The abstractor of a German pharmaceutical paper, who evidently was not very familiar with the English language, without much ceremony described it as a "new remedy". The paragraph was copied by a number of German journals without quoting the original source. The result was that several American journals copied likewise and the article which early in the year was described in this country as a war relic, several months later paraded through our pharmaceutical journals as a "new remedy."

Definite information with regard to a new remedy: its chemical or botanical discovery, the time when firs

applied therapeutically, the spread of its use etc. is not only interesting but instructive. Misinformation can ofttimes become worse than useless. Whatever excuse there may be for sinning in this direction, carelessness certainly cannot be construed as sufficient excuse in compiling a list of new remedies that have been or are supposed to have been introduced during a given year.

Americans are accustomed to look at everything German as being done with painstaking thoroughness at least. If, however, a German pharmaceutical journal enumerates a preparation as being introduced in 1896 and at the same time refers the reader to another number of the same journal where the reader will find the statement that this "new remedy" has dropped from use, it is time to call attention to such carelessness. Lists of new remedies introduced in a given year are very instructive and if correct may become valuable historically. But if carelessness is their characteristic, they become worthless rubbish, or even worse than worthless. Why secret preparations and nostrums should be dignified by naming them "new remedies" and thus according them a place in our materia medica, may not be readily comprehensible to some, though the trend of modern pharmacy might justify this action in the eyes of many others. A revision of a list that has appeared about the middle of last and at the beginning of this year may not be out of place. It may not be possible in most cases to go back to original authorities, yet it will no doubt be instructive to point out a number of misstatements. This, it is hoped, will lead to a more careful handling and treatment of the subject of new remedies in the future.

Organic Chemicals.

Acidum boro=benzoicum. The reviewer credits Merck's Market Report, 1896, p. 89 as the source of his information. The writer of the Market Report refers to boro-benzoic acid as to an article known at least for some time to the drug market, but mentions no other authority.

The acid seems to be of the type of the boro-salicylic and boro-citric acids. Both editions of the National Formulary contain a sodium boro-benzoate, which is directed to be prepared by intimate mixture of sodium borate and sodium benzoate.

Acidum glycerino=phosphoricum. The information is taken in part from Merck's Bericht über das Jahr 1895. Merck states that the acid was introduced therapeutically by Pasqualis and Robin, evidently in 1893, and that the calcium salt as nervine tonic had taken special footing in France during 1895. The Pharm. Ztg., 1896, p. 368, reports on an improved method for the preparation of this acid and its salts, their properties and administration. Neither the acid nor its salts, nor their therapeutic use is new.

Actol. At a meeting of the Gesellschaft für Natur- und Heilkunde zu Dresden Dr. Credé reported on Jan. 25, 1896 with regard to the use of silver in surgical and bacteriological application. The silver lactate was prepared at his request by Dr. Heyden of Radebeul. Whether it was the physician or the chemist who substituted the name actol for the simple and expressive chemical term does not become apparent from the report of the address in the Therapie d. Gegenwart, 1896, p. 236. (14, p. 111).

Alkaloidal Stearates. The stearates of morphine, atropine, and cocaine were reported on by Francesco Zanardi in the Bulletino chimico farmaceutico for 1896. They were introduced to take the place of the mixtures of these alkaloids with fats. (14, p. 114).

Amyloform. This compound first prepared by Prof. Classen of Aachen, by the action of formic aldehyde on starch, has been introduced during the past year by the firm Rhenania, (Pharm. Ztg., 1896, p. 564 and Pharm. Centrh., 1896, p. 801). When the compound was first prepared by Classen is not mentioned.

Amylum iodatum. Iodized starch was officinal in the U. S. P., 1880, but was dropped in the ed. of 1890. That Dr. Majewski recommended it anew in the Wiener Med. Pr., 1896, 19, seems to have been sufficient reason to enumerate it as a new remedy introduced during the past year.

Anagyrinum hydrobromicum crist. The information is obtained from Merck's Bericht für 1895. In the report for 1894 Merck calls attention to this salt stating that the alkaloid was first prepared by Hardy and Gallois, and refers to the publication of the Soc. de biolog. for 1895 and to the Journ. de Pharm. et Chim. for 1889. The physiological examination of the alkaloid is said to have been made by these investigators together with Bochefontaine and Gley. Whether the free alkaloid or the hydrobromide were used is not mentioned. In the Report for 1895 Merck states that the former fragmentary communications were supplemented by A. Coutrest in 1892 (Thèse de la faculté de Méd. de Paris 1892, No. 321). Even if the scientific horizon of the compiler of the list were identical with the German boundary, his date would be incorrect by two years.

Anusol. According to C. Weinreben, proprietor of the Buchka'sche Hof-Apotheke in Frankfurt a. M. this name is a synonym for iodo-resorcin-sulphonate of bismuth. (Parm. Ztg., 1896, p. 695; and Pharm. Centrh., 1896, p. 718). Both data and references as to when the compound was first prepared are not given.

Atropine iodate. The Pharm. Post for 1895, p. 537, contains an abstract from the Therap. C. Bl. with reference to the use of atropine iodate as a mydriatic. (14, p. 92).

Bismal. The bismuth salt of methylene digallic acid is described by Merck in his Report for the year 1895. This report, however, was published in 1896, hence the misstatement as to the year.

Bismuthum loretinicum. This is described in Merck's Bericht for 1894 as the bismuth compound of loretin, orthooxyquinoline-meta-iodo-ana-sulphuric acid. In this report the drying effect of the compound when applied externally is mentioned. In the report for the year 1895 attention is called to the results of W. Nicati (Sem. médicale, 1895) who has used it in ophthalmology.

Bromosinum. Compounds of bromine and iodine with albumen were prepared almost simultaneously by the apothecary Dr. Reiss of Augsburg, (Pharm. Ztg., 1896, p. 782), and by the apothecary Hunrath of Cassel, (ibidem, p. 796). The bromine compound of the latter was introduced under the above name as a powder with a guaranted bromine content of 10 p. c.

Bryonin. The well known glucoside of bryony root was examined by J. M. Schaller. (The Alkaloid, 1894,

p. 155.) The Am. Med. & Surg. Bull. for 1895 reported on this article and caused Merck to mention the results in his Report for 1895. Hence a therapeutic examination of a well known drug made evidently in 1894, but brought to the notice of the compiler at the beginning of last year, caused it to be enumerated as a new remedy introduced during the year 1896.

Caffeine iodol. The Pharm. Ztg., 1896, p. 497 refers to the Zeitsch. d. allg. oestr. Apth. Ver., (50, p. 533) as the source of its information. From the data there given it does not become apparent whether the substance is a chemical compound or not, nor when or by whom it was introduced.

Calcium carbide known chemically for some time is stated to have been recommended as a hæmostatic by Aimé Guinard. (Pharm. Ztg., 1896, p. 453; from D. Chem.-Ztg., Repert.)

Canadine. With regard to the chemical history of canadine, which is by no means altogether recent, consult the review of the subject by E. Schmidt in the Arch. f. Pharm., 232, p. 136.

Cannabinol is a toxic red oily substance, $C_{18}H_{24}O_2$, isolated by Wood, Spivey, and Esterfield from Indian hemp. It was examined physiologically by Marshall. The original chemical communication appeared in the May number of the Journ. Chem. Soc., for 1896, p. 545. A preliminary physiological report was made in the same journal, a more detailed report was to be made elsewhere.

Carissin, a glucoside, isolated from the bark of *Carissa ovata*, R. Br., var. *stolonifera*, by J. H. Maiden and H. G. Smith. The information is obtained from the Pharm. Journ., 1896, I, p. 83. In the Journal, which contains only an abstract on the page referred to, no reference is made to the original article, hence further investigation will be necessary to ascertain whether this glucoside was discovered in Jan. 1896, or earlier.

Carniferin. According to G. Arends (Pharm. Ztg., 1896, p. 42) this preparation made by the Farbenfabrik at Hoechst is an iron compound of sarcophosphoric and was introduced in 1895. Dr. W. S. Hall reported on the same in the D. Med. Ztg. for 1896.

Chininum sulphoichthyolicum, a compound obtained by double decomposition between quinine hydrochloride and ammonium sulphichthyolate. The reference given is incomplete.

Chinoform or **Quinoform.** De Vrij (Pharm. Weekblad, 1896, 44) so designates a precipitate obtained by the action of formic aldehyde and hydrochloric acid upon the aqueous extract of cinchona bark. It is supposed to be a condensation product of cinchotannic acid and formic aldehyde, analogous to tannoform.

Chinosol or **Quinosol.** The first reference in the Pharm. Ztg. is taken from the Zeitsch. f. Krankenpfl. 1895, III, hence this antiseptic must have been introduced before 1896. Dr. Ostermann in the Therap. Monatsh. 10, p. 155 states that the article, the chemical formula of which is given as $2(C_9H_6N.OSO_3K)+H_2O$, was patented by Franz Fritzsche & Co. of Hamburg, but does not mention the date of the patent.

Coronillin. In No. 1 of the Revue méd. de la Suisse rom. for 1896, Prevost of Geneva reports on his pharmacological studies of coronillin. The article was abstracted for the Therap. Monatsch. for May 1896, p. 285. Prevost, however, calls attention to the fact that his results substantiate those of Schlagdenhauffen and Reeb (Journ. de Pharm. d'Alsace-Lorraine 1888—1893), and also mentions the work of Spillmann and Haushalter (Gaz. hebdom. 1893, 23 & 24). Coronillin, therefore, was not introduced as a new remedy during 1896, neither is the observation that it is a heart poison like digitalin, new.

Diiodosalicylicacidphenylester or diiodosalol was patented by E. Herzfeld, possibly in 1896. No other data pertaining to time of introduction than number of patent are given.

Diiodocarbazol was possibly introduced by Zimmer & Co. of Frankfurt a. M. during January 1896 or earlier (Pharm. Ztg. 1896, p. 90). It was patented by A. Classen about two years earlier, the German patent being dated May 27, 1894. (Ber. 28, p. 699.)

Erythrol tetranitrate. Bradeury reported on this and similar compounds evidently in the Wiener med. Blätter for 1895, p. 779. (14, p. 140.)

Eucaïne hydrochloride, the new local anaesthetic, is the salt of benzoyl methyl tetramethyl-μ-oxypiperidine carbonic acid methyl ester and was introduced evidently in 1896 by the Chem. Fabrik a. Akt. (vorm. E. Shering) of Berlin.

Eucaseïn. The ammonia salt of caseïn can be prepared directly in solid form by passing ammonia over dry, pulverized caseïn, or suspending caseïn in such liquids in which neither it nor its salts are soluble (alcohol, ether, benzene, petroleum ether, etc.) and passing ammonia into the mixture as long as the gas is absorbed. This process was patented by. E. Salkowski and W. Majest, evidently in 1896. (Zeitsch. f. angew. Chem., 1896, p. 176). (14, p. 140.)

(To be continued.)

Literary.

Books and Pamphlets Received.

University of Wisconsin — Madison. Analytic Keys to the Genera and Species of North American Mosses. By Charles Reid Barnes. Revised and extended by F. D. Heald with the cooperation of the author. Bulletin of the University of Wisconsin. Science Series, Vol. 1, No. 5, pp. 157—368. 1897. $1.00.

Julius Springer — Berlin. Vierteljahresschrift über die Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel, der Gebrauchsgegenstände sowie der hierher gehörenden Industriezweige. Unter Mitwirkung von Fachgenossen redigirt von Dr. A. Hilger. Elfter Jahrgang. Das Jahr 1896. Drittes Heft, pp. 311–466. 1896. M. 3.00.

Nitschke Brothers—Columbus, O. Pharmaceutical Interrogations. A list of classified questions upon subjects pertaining to pharmacy, accompanied by references to standard authorities. For the use of students. By Prof. J. H. Beal, Principal of the Department of Pharmacy of Scio College, Scio, Ohio. 1896.

Author. — Camphoric Acid. Fourth paper. By W. A. Noyes, Professor of Chemistry of the Rose Polytechnic Institute. Reprinted from the Am. Chem. Journ. Pamph., pp. 11.

Author. — 1. Notes on the Flora of Western Iowa; 2. Some Notes on chromogenic bacteria; 3. Fungus diseases of plants at Ames, Iowa, 1895; 4. Some anatomical studies of the leaves of Sporobolus and Panicum. By L. H. Pammel. Reprinted from the Proc. of the Iowa Acad. of Sc. for 1895. Pamphlet, pp. 56.

Authors. — A contribution on the gases produced by certain bacteria. By L. H. Pammel and Emma Pammel. Reprinted from Centrbl. f. Bakt., Parasitenkd. u. Infektionskrankheiten. Pamphlet, pp. 16, with one plate.

Author. — Some notes on grasses collected in 1895, between Jefferson, Iowa, and Denver, Colorado. Reprinted from the Proc. of the Soc. for the Promotion of Agr. Sc. 1896. Pamphlet, pp. 10.

Author — Scio, Ohio. 1. Pharmacy laws of the United States—A comparative exhibit. 2. What is the best method of bringing about greater uniformity in pharmacy legislation in the different states. By J. H. Beal. Reprinted from the Proc. of the A. Ph. A., 1896. Pamphlet, pp. 29.

Author — Chicago, Ill. Shall alcohol employed in manufactures and the arts be tax-free. Address before the joint committee of the U. S. Senate and the House of Representatives on the alcohol tax in session in N. Y. City, Dec. 3, 1896. By George P. Engelhard, representing committees of national, state and local associations of retail druggists. Pamphlet, pp. 11.

Author — Brooklyn. Volumetric determination of acetone. By Edward R. Squibb. Reprinted from J. Am. Ch. Soc., Pamphlet, pp. 12.

Author — Cambridge. A sketch of cryptogamic botany in Harvard University 1874—1896. By W. G. Farlow. Pamphlet, pp. 16.

Author — New York. An analysis of the negative forces that are disintigrating our State Pharm. Assn., and of the reconstructive methods that will tend to re-establish it on a permanent foundation. President's annual address. New York Pharmaceutical Association. By George J. Seabury. Phamplet, pp. 19.

Schering & Glatz — New York. Glycerophosphoric acid and salts and their uses. Pamphlet, pp. 12.

Reviews.

The Principles of Theoretical Chemistry, with special reference to the constitution of chemical compounds. By Ira Remsen, Professor of Chemistry in the Johns Hopkins University. Fifth edition. Thoroughly revised. One vol., 12mo, pp. x, 326. Lea Brothers & Co., Philadelphia. 1897. $2.00.

The importance of the study of chemistry has been recognized in this country to such an extent that at least an elementary course is offered by all universities and colleges and even by no small number of high schools. The significance of the laboratory method of instruction has also been recognized. There was a time not very long ago when a number of schools, including colleges of pharmacy and medicine, attempted to teach chemistry by lectures and quizzes. To-day there are certainly but few institutions where instruction in chemistry is attempted without making at least some laboratory work obligatory.

Whereas commendable progress has been made in the instruction of elementary chemistry, only a limited number of the larger institutions of learning, principally the universities, offer liberal opportunities for advanced work. No doubt, school-boards and trustees have been so liberal in granting funds for elementary work, because chemistry is popularly regarded as one of the useful sciences which can be turned into money. The need for advanced work has not been recognized to anything like the same degree. This will account in part for the fact that the demand for teachers especially in secondary schools has been greater than the supply of competent instructors. Many of our normal schools to-day carry into practice the idea that a student who has had a twelve weeks course in chemistry makes a competent teacher.

Under these conditions it must certainly be gratifying to the author of a treatise on theoretical chemistry to find that his work is appreciated to such an extent that a fifth edition is already called for. A book that assists in creating a desire and a position demand for something more than a merely elementary experimental course in chemistry certainly accomplishes an excellent mission in this country. The fact that the work has been translated into German and Italian, though gratifying to the author, is of less importance to us as a people. Americans, in very large numbers, have gone abroad to get their higher chemical education. The migration to European universities has been an excellent thing for American education in general. There is no reason, however, why American universities should not offer courses in chemistry as good as those offered by German universities. Only after they do may we expect better chemical instruction in our high-schools, academies and even colleges.

The principles of theoretical chemistry as well as their author are so well and so favorably known in this country that a discussion of the contents of the book seems almost uncalled for. Although the recent development of physical chemistry tempted the author to materially change the character of the book, he has refrained from so doing, and has thoroughly revised the fourth edition along the old lines and brought it up to date. The new edition will be wellcomed not only by teachers and students of chemistry, but also by the large number of chemists whose routine duties

tend to draw them away from the fountain of their science. A book of some three hundred pages can be read with pleasure and profit in the leisure hours of a busy chemists life. *E. K.*

Einführung in das Studium der Alkaloide mit besonderer Berücksichtigung der vegetabilischen Alkaloide und Ptomaïne. Von Dr. Icilio Guareschi. Mit Genehmigung des Verfassers in deutscher Bearbeitung herausgegeben von Dr. Hermann Kunz-Krause. Erste Hälfte, pp. v, 304. Hermann Heyfelder, Berlin. 1896.

Pharmacists, who aspire to be something more than mere venders of drugs and druggists' sundries, but who despair of ever attaining a higher position for their calling we would advise to read the historic introduction to the above monumental treatise. The names of Sertuerner, Pelletier and Caventou and the record of what they accomplished at the beginning of this century should inspire even the pessimistic to make one more effort at least to redeem a calling that is at present passing through an exceedingly unenviable stage in the course of its development. Being deprived almost entirely of its former prerogative—if the pharmaceutical and chemical manufacturer are considered to be outside the pharmaceutical fraternity proper—the general practitioner has not yet adapted himself to present social and economical conditions. The history of the alkaloids should teach him that the field of research is still open to all and that its area is larger than ever. The classic work of the three pharmacists enumerated above certainly ought to afford inspiration for all times. The fact that both authors of the work at hand are pharmaceutical chemists demonstrates sufficiently that the subject of alkaloids has not only not suffered in interest for the pharmaceutically inclined investigator, but also that pharmacists can at the close of this century as well as at the beginning accomplish something in this field that is both classic and monumental.

The work of which the first half lies before us and of which the second half is to appear soon constitutes a monograph of about six hundred double column quarto pages and is throughout a fine specimen of excellent book-work.

The special part, which follows the very interesting introduction is divided into five parts dealing respectively with: bases with open chains; bases with closed chains; metallic amines; alkaloids proper; and ptomaïnes and leucomaïnes. Groups four and five are only of a temporary nature. As fast as the constitution of their members have been determined these are added to groups one or two respectively.

A classification of organic compounds containing nitrogen is no easy matter at present. There can be but little doubt that the classifications adopted by most text-books are bad. The authors have adopted a system different from that generally used and hope to have supplied the student with something in this direction that will lead him to think for himself. This is certainly commendable, probably more so than the system they themselves have adopted. About the latter opinions certainly seem to be at variance.

The Italian author wrote the book because there was nothing like it in his language. The German translator and revisor undertook the work, because even German chemical literature was not in possession of such a treatise. It scarcely seems necessary, therefore, to add that our chemical and pharmaceutical literature is still wanting a like monograph on this very important subject. Those who read German will, no doubt, thank the translator for having not only translated Guareschi's work, but also for having brought it up to date. *E. K.*

Dictionnaire de Physiologie par Charles Richet, Professeur de Physiologie à la faculté de Médecine de Paris. Tome deuxième, 1er fascicule. Baer (Karl Ernst von) — Bulbe. pp. 1—320. Félix Alcan, Éditeur, Paris. 1896. Fr. 8.50.

Those who are so fortunate as to possess volume one of this excellent dictionary, no doubt have been looking forward with considerable expectation, and possibly with some anxiety, to the appearance of part one of volume two. Their patience has at last been rewarded and the fascicle of more than three hundred pages, which constitutes almost a volume in itself, now lies before them and is found to be replete with interest. This excellent dictionary or rather encyclopædia deserves the widest possible distribution.

The new fascicle contains in all fifty articles, several of which are veritable monographs of about fifty and even more pages. Of the fifty articles seventeen are on chemical subjects. This number includes several alkaloids, benzene, benzoic acid, bromal, bromoform, bromides, and the elements baryum, bismuth, boron and bromine. Of the seven articles on physiology proper that on bile with sixty-five pages and the unfinished article on the medulla oblongata with fifty-five pages in this fascicle deserve special mention on account of the detailed treatment accorded them. Physics comes in with two articles, one on barometric pressure covering forty-seven pages; zoology with one; botany and pharmacognosy with two, viz. on belladonna and boldo; foods and beverages with three, viz. beer, bouillon and butter.

Biography comes next to chemistry as far as number of articles is concerned. Karl Ernst v. Baer, H. Beaunis, Charles Bell, Alex. Graham Bell, Claude Bernard, Paul Bert, Albrecht v. Bezold, Xavier Bichat, G. Bizzozero, E. du Bois Reymond, G. A. Borelli, C. Bourgelot, H. P. Boroditch, C. E. Brown-Séquard, E. v. Brucke, T. Lander Brunton are the ones mentioned. The bibliographic notices are as a rule painfully short, whereas considerable space is given to the classified enumeration of publications. Such a treatment may have its decided advantages; it is, however, not without its disadvantages. Although considerable attention is given to chemical subjects, as is strikingly demonstrated in this fascicle, yet E. Bauman, the late physiological chemist, who certainly has done much to assist in the solution of physiological problems, is not even mentioned.

Two articles of a more general nature remain to be mentioned: one on biology, the other on bibliography covering not less than forty-three pages. The author discusses briefly the utility of bibliography and then gives a detailed account of the rules of bibliographic technique. This is followed by a list of the principal treatises on physiology, of reports of physiological laboratories, published as volumes, and of journals. Finally

considerable space is given to a detailed exposition of the decimal system of classification as applied to physiology.

This clearly shows that the editor has not shifted from his position as stated in the introduction to the first fascicle issued, viz. to make the work an all-comprehensive treatise on physiology. Certainly every one who is at all interested in this fascinating science will wish authors and publishers success in their great undertaking.

E. K.

Apothekerkalender für das deutsche Reich, begründet von Oscar Schlickum. 1897. Mit Anhang: Die Apotheken der Schweiz und Luxemburgs sowie einer offiziellen Zusammenstellung sämmtlicher Personal-Verhältnisse des Deutschen Apotheker-Vereins. Herausgegeben von Apotheker Fr. Kober, Redakteur der Süddeutschen Apothekerzeitung. Mit dem Bildniss von Adolph Frickhinger. Fünfzehnter Jahrgang. Verlag von Strecker und Moser, Stuttgart.

The number of "Apothekerkalender", each of which is a *multum in parvo*, published annually in Germany is something remarkable. These small volumes for ready reference which can be carried about in the pocket while working in the laboratory are very convenient indeed and appreciated by every one who has had occasion to use them. In Germany not only the apothecary, but the chemist, the engineer, in fact almost every calling has its own "Kalender". Besides the technical information boiled down in tables etc. they contain all conceivable valuable information from postage rates to the enumeration of holidays. More than that, there is sufficient space left for a short monograph or a biographical sketch with portrait. *E. K.*

Allgemeine Waarenkunde. Handbuch für Gewerbetreibende. Unter Mitwirkung von Fachgenossen, redigirt von Josef Bersch. Ein Bd., pp. 952. A. Hartleben's Verlag, Wien, 1896. M. 10.00. Halbfranz Einbanddecke. M. 1.60. 1896.

The commercial and financial crisis through which we have recently gone and of which we still feel the effects, has emphasized the doctrine of the survival of the fittest. Though this doctrine by no means applies strictly to human affairs it is of sufficiant application to have stirred up not only individuals and communities, but entire nations. England affords us a striking example at the present time, while the people of the United States are still looking largely to the government for aid and relief. The need of better education and training, however, is felt the world over, not only in the learned professions, but in the humbler callings as well. A variety of schools have grown out of this demand. The need of literature has also been felt and partly applied. Technical papers and journals have multiplied in unprecedented manner. Monographs on almost all possible subjects have been written. The publishing house of Hartleben in Vienna is well known for its ever-growing series, already numbering several hundred, of monographs on scientific and technical subjects written in a popular scientific style. That this firm began the publication of an encyclopædic dictionary of all articles of commerce obtained from the three natural kingdoms was announced in this journal somewhat more than a half a year ago. The first numbers were also received about that time. Since then the fascicles — twenty in all — followed in rapid succession and the work now lies complete before us.

It comes fully up to earlier expectations. The development particularly of African colonies has brought into the market a host of new articles of commerce, many of which are of great interest and importance. The authors have taken great pains to bring the contents up to date. A work that is to cover a material so vast must of necessity be concise. For the average person who uses such a book this is an advantage. For the benefit of those who desire more detailed and systematic information a classified catalogue of the publisher's chemico-technical library is added. The two supplement each other admirably and will be found serviceable by all those who desire to move with the progress made since they left college, as well as by the larger contingent who not having had special training but desire to improve themselves by home study. *E. K.*

Tabellarische Uebersicht der im Handel befindlichen künstlichen organischen Farbstoffe. Von Gustav Schultz und Paul Julius. Dritte vollständig umgearbeitete und stark vermehrte Auflage, herausgegeben von Dr. Gustav Schultz, Professor der chemischen Technologie a. d. k. techn. Hochschule zu Muenchen. Hermann Heyfelder, Berlin. 1897. M. 20.00.

The third edition of this work by the well-known author of the Chemistry of Coal-tar contains in tabular form the names and synonomy of five hundred and four artificial dye-stuffs, their structural formula wherever possible, the method of formation, the name of the discoverer and the year when discovered, the number of the patent or patents, references to the literature of the particular dye-stuff, and finally a brief description of its physical and chemical properties and its uses. The arrangement is based on chemical classification common in similar treatises.

Of the four-hundred and four dye-stuffs which were enumerated in the first and second editions eighty-seven were dropped because no longer in the market. On the other hand, one hundred and eighty-seven new ones were added. The old names, however, are again included in the index for historical reasons. Names of such dye-stuffs which appeared in the market recently, but could not be described in the text, are also added. The number of trade names by which the same dye-stuff is introduced by various manufacturers has been materially increased.

The importance of this class of chemicals makes this work, which seems to be indicative of accuracy as well as thoroughness, a very valuable one not only to the technical chemist and manufacturer who are interested in this particular field of chemistry and chemical technology, but to the general chemist as well. The fact that a previous edition has been translated into both Italian and English indicates that the value of the book is appreciated by others as well as by the Germans. The book should at least find a place in every organic chemical laboratory. *E. K.*

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EDITORIAL.

Nothing can be more pleasing to scientists than the impetus research is receiving in England. The Davy-Faraday Research Laboratory which England owes to the munificence of Dr. Mond has received world-wide attention. American pharmacists have taken pride in the establishment of a pharmaceutical research laboratory, the Wellcome Research Laboratory, in London, by an American, and in the appointment of an American to the position of Director. Attention has been called to the establishment of fellowships and scholarships. How generally the English people have been stirred by the recognition of the fact that scientific research constitutes one of the pillars upon which even industry rests, is shown by the source from which some of the fellowships spring. The Chemist and Druggist now reports that the Leathersellers' Company, under the mastership of Dr. W. H. Perkin, voted a grant of 150 £ a year to be applied to founding one or more fellowships for the encouragement of higher research in chemistry in its relation to manufacturers. If the present movement continues, England may some day regain some of her former prestige as a manufacturer of chemicals.

There has been more or less rejoicing in late years over the constitutionality of pharmacy laws. One of the reasons why pharmacy laws were not more rigidly enforced lay in the doubt state boards had as to the constitutionality of the laws which they were appointed to enforce. Whenever a supreme court passed affirmatively on any law or even a single chapter of a state pharmacy law, there was rejoicing on the part of those in authority as well of those who desire to see their calling regulated by the state. Such has recently been the case in Illinois. Even one of the Chicago dailies commented on the decision and pointed to the public gain to be derived from a more thorough enforcement of laws for some time on the statute books, but largely inoperative for fear that the child might be poured out with the bath.

Yet in spite of like favorable decisions state boards and pharmacists in general seem to be easily frightened when lawyers threaten to carry a given case to the supreme court in order to make a test of constitutionality. They have been equally timid when governors violated the specific instructions of the law in the case of appointments. In Wisconsin and Illinois the governors have within recent years transgressed their power in this respect. The Minnesota pharmacists, whose nominating power was totally disregarded by their present governor, have been up in arms. Again the demon of questionable constitutionality has risen. The pharmacists seemed to take a bold stand for a time. Why they should be willing to abide by the decision of a senate committe it is difficult to understand, unless it is the fear that the present legislature might out of spite repeal the entire law. The question of fitness of the persons appointed by the respective governors does not come into consideration at all. Furthermore, these governors, if they really believed the law to be unconstitutional, would receive much more credit for the stand taken if they called the attention of the legislature to visible defects. As it is

at present, they can hardly escape the criticism of seeking to appoint political favorites or even of being anarchical.

It is to be hoped that at least that part of the bill which does away in France with second class pharmacists and a third class termed herbalists will pass. Wherever these different classes occur, there has been no end of difficulty. Besides the inevitable tendency has been a downward one on part of the upper class or classes. Commercialization of the first class pharmacies in France has assumed such proportions that it has called for national legislation not so much to protect the pharmacist of the first class, but the public. It is to be hoped that the experience of France, Austria and Germany will serve as a lesson to other people. The sick have but little protection when most in need of it as long as quacks in medicine and pharmacy are licensed by governments to lure them by low prices and smooth words. Even the little experience that we have had in this country with the so-called minors has been far from satisfactory. At present attempts are to be made to secure uniformity in pharmaceutical legislation by the various states of the Union. Several suggestions have already been made including provision for different classes of pharmacists. It is to be hoped that nothing of such a nature will prevail.

Hermann Hager.

Dr. Hans Hermann Julius Hager died after prolonged illness at the home of his son in Neuruppin at the age of 81.

Hager's name has been a by-word in almost every pharmacy, no matter under which sun, in which the German language is understood. That his name has not been foreign to others as well is shown by the list of societies and corporations other than German of which he was an honorary member. The fact is that he was possibly even more favorably known abroad than at home.

The reason for this is not far to seek. A country in which everything seems to have been boiled down to a system is apt to look askance at a person who ventures to educate himself by following some other than the conventional path. This was true of Hager. The recognition which he ultimately received at home was largely through sheer strength of character.

Hager was born Jan. 3, 1816 at Berlin as the son of a military physician. He received private and public instruction including several years at the Gymnasium which he left in 1832 ready to enter the "Secunda". He entered the Loewenapotheke in Salzwedel as apprentice. Inasmuch as he could not pay for his apprenticeship, he was expected to do the work of an errand boy and porter as well as that of an apprentice. The preceptor kept his books locked in a book-case where his subordinates had no access to them. Only two books, one of which was a pharmacopœia of the last century, were regularly accessible. They offered anything but an inspiration for study. So Hager used his school-books to perfect himself in the languages, in history and literature. By accident he found two chemical works, one without a title page, under rubbish in the attic, and by trickery he managed to secure for a few days at a time the fascicles of the Archiv für Pharmacie which his preceptor received as regular subscriber. Although neglected and abused, Hager made such excellent use of the very meagre facilities that at the end of his apprenticeship he was excused from the assistant's examination with an excellent recommendation from the district examiner.

In several positions which Hager held as assistant he found likewise meagre literary facilities and his income of from 210 to 240 marks did not permit him to buy books. This frequently led to the study of botany in the field. In Breslau he served a year with the military under the direction of his father. Here he also attended as a visitor lectures on historical, scientific and medical subjects. His fifth year as assistant he spent with an apothecary in Perleberg whose large library was at his disposal. Inasmuch as Hager did not have the means to attend the university, he considered the thought of leaving pharmacy and becoming a chemist. It happened that a former schoolmate who was getting ready for his final state board examination entered the same pharmacy as assistant. Hager studied with him and thus became well acquainted with the general range of knowledge expected in such an examination. His friend having successfully passed the examination, Hager took courage and presented himself to the examining board. None of the regular students, however, cared to be examined with him and so Hager was compelled to look about for two less dignified candidates who had failed at their first attempt. Whereas the visiting pharmacists, who attended the final public examination, seemed to have no good word for him, the examining board passed him with the predicate "very good".

For seventeen years Hager owned and conducted a pharmacy in Fraustadt. In 1859 he sold his pharmacy and moved to Berlin to devote his time exclusively to chemistry and pharmaceutical literature. Desirous of more quiet he withdrew as it were to Pulvermuehle, near Fuerstenberg a. O. In 1881 he removed to Frankfurt a. O. and later to Neuruppin.

If one looks into the lives of some of the great men German pharmacy has produced during the past century, one is surprised at the lack of opportunity, the almost utter absence of facilities for study which some of them had to contend with.

One is inclined to ask how such a system could produce such men. The only answer is that the men became what they were or are in spite of the system. The three and more years of apprenticeship without literary or laboratory facilities, with no inspiration, but under constant check on the part of the rigid preceptors, are comparable to the rocky and barren soil on which the Puritans landed. Such conditions and surroundings may assist in moulding a sturdy race, but any other than a sturdy people would perish. The New England country did not so much make the Puritans, the Puritans made New England.

If it were not known that Hager was active in a literary capacity, writing literary bits for local papers some time before he published any of his scientific results, one might be inclined to suppose that the absence of books in the shops in which he served his time as apprentice and assistant spurned him to supply a demand which he himself had so keenly felt. No doubt this did influence him, but on the other hand it becomes apparent that Hager worked and wrote because he must. He seems to have yielded to an inner pressure. It is said of the artist that his conception is relieved by childbirth only. This, no doubt, is true of literary and scientific men as well. They do the inevitable, it is the only natural course.

There can be no doubt that Hager made the most of his gifts and opportunities. His works, though skeptically received at first by many, have found their reward. "What good can come from Nazareth" is a saying that does not seem to grow stale. How dare a county apothecary write commentaries on the pharmacopœia and what good can a would-be scientist accomplish who has never been a regular student at a university. Hager's works have spoken for themselves and at least one German university honored the writer.

Yet it must be conceded that Hager was less a scientist in the modern sense of the term than an empiricist and compiler. This statement, however, need not involve a lack of appreciation of what Hager has done, neither does it justify those who discredited him unduly. It may, however, assist in throwing light upon the life and work of Hager.

Hager has not discovered any great truth; he was no philosopher; neither was he a brilliant experimenter. He was rather what Prof. Lloyd in his Study in Pharmacy terms a rational empiricist. Just where in actual practice the division line is to be drawn between rational empiricism and science is, no doubt, difficult if not altogether impossible to say. In a general way, however, Hager belonged to the former type of investigators.

This is no reason for discrediting him or his work. The fact is that he deserves all the more credit for having accomplished such remarkable results in spite of the early lack of opportunities for study. Even the German Apothecary Society at last honored the prophet in his fatherland by making him honorary member at the time of his fiftieth anniversary as apothecary.

A peculiar difference between England and Germany has been frequently noted by students of education and investigation. Whereas Germany seems to draw most if not all of her eminent scientists to her centers of learning, her universities, at English universities these men are conspicuous largely by their absence. Whatever lesson this state of affairs may teach in a general way, it may also help to explain Hager's position among the Germans. Not having completed the Gymnasium, never having been a student in regular attendance

Dr. Hermann Hager.

at a German university, these very facts, whatever his attainments and positive results, practically excluded him from entering university circles as teacher, investigator or writer. Outside this circle his task was doubly difficult.

Yet he has been successful, and whatever criticism just or unjust has been showered upon him, he died respected and honored by most if not all who knew him or merely knew of him. The example of his life should help to inspire others to make more of their time and capacities than they are doing. Truly, it is more difficult to-day to acquire equal prominence under like disadvantageous circumstances, but Hager's life teaches and preaches: "Where there is a will, there is a way." Pharmacy is in need of just such men. If we could only couple such will power with the best education and training and with modern facilities for work, the future of pharmacy would appear brighter than it does.

E. K.

ORIGINAL CONTRIBUTIONS.

Medicinal Plants of Brazil.*

By *Dr. Theodor Peckolt of Rio de Janeiro.*

Aydendron riparium Nees. Dieser Baum findet sich im Staate Amazonas und heisst *Paó rosa* wegen der hellrothen Farbe des Holzes. Er findet keine medicinische Verwendung, doch wird das dauerhafte Holz zu Bauten und Möbeln benutzt. Ebenso

Aydendron canella Meissn. welcher in den Nordstaaten als *Paó de canella* und *Canella caixeta* — Kistenholz — bekannt ist, da das bräunliche Holz fast ausschliesslich zu dünnen Brettern für Kisten etc. verarbeitet wird.

Aydendron tenellum Meissn. Ist in den Staaten Alagôas und Ceará als *Canella amarella de cheiro* und *Louro amarella de cheiro* — Wohlriechender Zimmt- und Lorbeerbaum bekannt. Es ist ein Baum von 6—8 Meter Höhe mit dünnen herabhängenden Aesten. Die Blätter sind länglich-lancettlich, zugespitzt, oberseits lebhaft grün, unterseits gelbgrünlich. Die Rispe besteht aus weissen, wohlriechenden Blüthen. Die Beere ist oval, 11 mm. lang, von violettrother Farbe.

Das Decoct des Holzes — 30 Gramm zu 240 Gramm Colatur — dient als magenstärkender und blutreinigender Trank. Das gelbe, wohlriechende Holz dient zu Bauten und ist für Möbel sehr gesucht. Es hat auch die vorzügliche Eigenschaft, dass es von dem *Cupim* (Termite) nicht beschädigt wird.

Aydendron? suaveolens Nees. In den Staaten S. Paulo und Minas als *Cajaty* bekannt. Es ist ein kleiner Baum mit länglich-lancettlichen, abgestumpften Blättern. Die Beere ist 2 cm. lang und ist ebenso wie die Blätter von angenehm aromatischem, etwas lorbeerähnlichem Geruch.

Die Tinctur der Früchte dient als Carminativum. Das Oel der Früchte wird zu Einreibungen bei Rheumatismus verwandt. Die Infusion der Blätter mit Zucker ist ein Volksmittel bei Husten.

Aydendron? Cujumary Nees. Im Staate Amazonas unter der Indianerbenennung *Cujumary*, *Cucumary* und *Cuchery* bekannt. Ein hoher Baum mit dicker, rissiger, korkartiger Rinde und länglich schmalen, fein zugespitzten Blättern. Die farbige Rispe hat ovale, 14 mm. lange, eichelähnliche Beeren, deren Samen sehr ölreich sind und einen noch stärker aromatischen Geruch als Pichurim besitzen. Dieselben dienen den Waldbewohnern als Universalmittel bei Magenschwäche, Magenkrampf, Unterleibsbeschwerden und Rheumatismus. Gepulvert, in der Dosis von 2 bis 3 Samen, haben letztere den Ruf als Aphrodisiacum. Im Dialekte der *Botiouden* heisst *Cujumary* Beischlaf. Rinde und Holz besitzen kein Aroma; letzteres ist ein vorzügliches Bauholz.

Aydendron riparium Nees. This tree is found in the state Amazonas and is called *Paó rosa* on account of the light red color of the wood. It is not used medicinally, but the durable wood finds use for buildings and for furniture. Likewise

Aydendron canella Meissn. which in the northern states is called *Paó de canella* and *Canella caixeta* — box wood — because the brownish wood is worked up almost exclusively into thin boards for boxes, etc.

Aydendron tenellum Meissn. Is known in the states Alagôas and Ceará as *Canella amarella de cheiro* and *Louro amarella de cheiro* — fragrant cinnamon and laurel tree. This tree reaches a height of 6 to 8 meters and has slender drooping branches. The leaves are oblong-lanceolate, acuminate, on the upper side bright green, on the under side yellowish green. The paniculate inflorescence consists of fragrant, white flowers. The berry is oval, 11 mm. long, of a violet-red color.

The decoction of the wood, 30 grams to 240 grams of colature, is used to strengthen the stomach and purify the blood. The yellow, fragrant wood is used for buildings and is much sought for furniture. It has also the excellent property of not being attacked by the *cupim* (termite).

Aydendron? suaveolens Nees. In the state S. Paulo and Minas known as *Cajaty*. It is a small tree with oblong-lanceolate, blunt leaves. The berry is 2 cm. long and like the leaves has an agreeable, aromatic, somewhat laurel-like odor.

The tincture of the fruit serves as carminative. The oil from the fruits is rubbed in for rheumatism. The infusion of the leaves with sugar added is a folk remedy for coughs.

Aydendron? Cujumary Nees. Is known in the state Amazonas by the Indian names *cujumary*, *cucumary* and *cuchery*. A tall tree with thick, fissured, corky bark and narrowly oblong, small, acuminate leaves. The colored panicle has oval, acorn-like berries, 14 mm. long, the seeds of which are very rich in oil and have an aromatic odor stronger than pichurim. These serve the forest inhabitants as a universal remedy for weakness of the stomach, stomach cramp, abdominal troubles and rheumatism. When powdered, 2 or 3 seeds given at a dose, these latter are regarded as aphrodisiac. In the dialect of the *Botioude*, *cajumary* signifies cohabitation. The bark and wood have no aroma; the latter is an excellent wood for buildings.

* Continued from p. 27. Translated for the Review by Dr. R. H. True, Asst. Prof. of Pharmacognosy at the University of Wisconsin.

Mespilodaphne organensis Meissn. Dieser Baum kommt auf dem Orgelgebirge im Staate Rio de Janeiro vor. Er heisst gewöhnlich *Canella parda* — brauner Zimmt — in einigen Districten auch *Canella goiaba* und *Canella garanna*. Er erreicht eine Höhe von 10 bis 15 Metern. Die Blätter sind lederartig, elliptisch, zugespitzt und glatt. Der Blüthenstand besteht aus kleinen Rispen mit weissgrünlichen wohlriechenden Blüthen. Die Beere ist rundlich, röthlich, bis zur Mitte von der Cupula umschlossen. Der Baum blüht im Juni.

Die geruchlose Rinde dient als Adstringens. Das gelbbräunliche Holz dient nur zu Bauten, wo es nicht der Feuchtigkeit ausgesetzt ist, vorzugsweise zu Plafondbrettern. Nach Saldauha hat es ein sp. Gew. von 0.609 bis 0.800; nach Dr. del Vechio 0.927.

Mespilodaphne opifera Meissn. Dieser Baum findet sich in den Staaten Alagoas, Pará und Amazonas und ist *Canella de cheiro* und *Louro de cheiro* — wohlriechender Zimmt- und Lorbeerbaum — benannt.

Der Stamm ist dünn und hoch. Die Blätter sind gross, langgestreckt, länglich. Die Blüthenrispe ist achselständig, straussartig, weissgrau und befilzt. Die Beere ist klein, eiförmig, bis zur Mitte von der Achse umhüllt, von hellgelber Farbe und stark aromatischem Geruch und Geschmack.

In Manaos wird aus den Früchten durch Destillation ein aetherisches Oel bereitet, welches für hohen Preis verkauft wird. Es ist gelb und dünnflüssig. Der Geruch ist angenehm und ähnelt dem einer Mischung von Sassafras, Lorbeer und Rosmarin. Sp. Gew. bei 13° C. = 0.864. Es soll Caoutchouc lösen.

Die Tinctur der frischen Blätter wird in der Dosis von 6 bis 10 Tropfen bei Cardialgie, Kolik, etc. verabreicht. Die gestossenen Beeren mit Oel digerirt und dann ausgepresst liefern ein Präparat, welches zu Einreibungen bei Rheumatismus als Volksmittel vielfach benutzt wird. Das Holz ist fest und dauerhaft und wird zu Bauten verwendet. Sp. Gew. = 0.897.

Mespilodaphne Sassafras Meissn. Kommt in den Staaten Espirito Santo und Rio de Janeiro vor und ist unter den Volksnamen *Sassafraz*, *Canella sassafraz* und *Canella funcho* — Fenchelzimmt — bekannt. Der Baum ist 15 bis 20 Meter hoch, besitzt eine glatte Rinde und hat schnurgerade, wirtelförmig stehende Aeste, die Wirtel mit 6 bis 12 lederartigen, glatten, verlängert-lancettlichen, an der Basis zugerundeten Blättern. Die traubige Rispe besteht aus kleinen, weissen, wohlriechenden Blüthen.

Die Beere ist länglich eiförmig, glänzend gelbröthlich, einer kleinen Eichel täuschend ähnlich, bis zur Hälfte von der Achse umgeben. Blüht im November, die Frucht reift im Mai.

In der Flora brasiliensis wird bemerkt, dass die Frucht unbekannt ist. Ich habe dieselbe im Jahre 1858 als No. 45 an Dr. v. Martius gesandt. Alle Theile des Baumes sind aromatisch, am geringsten die Blätter. Aus 50 Ko. der frischen Blätter erhielt ich durch Destillation nur 2.750 Grm. aetherisches Oel Es ist von hellbräunlicher Farbe, angenehm, etwas lorbeer-ähnlichem Geruch. Sp. Gew. 25° C. = 1.035. Iod löst sich sogleich ohne Temperaturerhöhung, eine dicke olivengrüne Flüssigkeit bildend. Sandelroth löst sich mit orangerother Farbe. Werden einige Tropfen Schwefelsäure zugefügt, so

Mespilodaphne organensis Meissn. This tree is found in the Organ Mountains in the state Rio de Janeiro. It is usually called *Canella parda* — brown cinnamon — in certain districts also *Canella goiaba* and *Canella garanna*. It attains a height of 10 to 15 meters. The leaves are leathery, elliptic, acuminate and smooth. The inflorescence consists of small panicles of greenish-white flowers. The berry is roundish, reddish, enclosed in a cupule to the middle. The tree blooms in June.

The odorless bark serves as an astringent. The brownish-yellow wood is used in buildings where it is not exposed to the moisture, especially as boards for ceilings. According to Saldauha it has a specific gravity of from 0.609 to 0.800; according to Dr. del Vechio 0.927.

Mespilodaphne opifera Meissn. This tree occurs in the states Alagoas, Pará and Amazonas and is called *Canella de cheiro* — fragrant cinnamon — and *Louro de cheiro* — laurel tree.

The stem is slender and tall. The leaves are large, elongated, oblong. The floral panicles are axillary, bouquet-like, grayish-white and tomentose. The berry is small, ovate, surrounded by the axis to the middle, of bright yellow color and strongly aromatic odor and taste.

In Manaos an ethereal oil is produced by distillation which commands a high price. It is yellow and thinly fluid. The odor is agreeable and resembles a mixture of sassafras, laurel and rosemary. Spec. grav. at 13° C. is 0.864. It is said to dissolve caoutchouc.

The tincture of the fresh leaves is given in doses of from 6 to 10 drops in cardialgia, colic, etc. The bruised berries, digested with oil and expressed, furnish a preparation much in use as a popular remedy rubbed in in rheumatism. The wood is firm and durable and is used in buildings. Spec. grav. 0.897.

Mespilodaphne Sassafras Meissn. This occurs in the states Espirito Santo and Rio de Janeiro and is known by the popular names *Sassafraz*, *Canella sassafraz* and *Canella funcho* — fennel cinnamon. The tree is 15 to 20 meters high, has a smooth bark and very straight, verticillately arranged branches; the whorls with 6 to 12 leathery, smooth, elongated-lanceolate leaves with rounded bases. The racemose panicle consists of small, white, fragrant flowers.

The berry is oblong-ovate, shining, reddish-yellow, misleadingly like a small acorn, half surrounded by the axis. The tree blooms in November, fruit ripens in May.

In the Flora Braziliensis it is noted that the fruit is unknown. I sent the same in 1858 to Dr. v. Martius as No. 45. All parts of the tree are aromatic, the leaves least of all. By distilling 50 k. of the fresh leaves, I obtained only 2.750 grams of ethereal oil. It is of light brown color and has a pleasant, somewhat laurel-like odor. Spec. grav. at 25° C. 1.035. Iodine dissolves immediately without increase of temperature, forming a thick, olive-green fluid. Sandal-red dissolves with orange-red color. The addition of a few drops of sulphuric acid causes an explosive reaction

entsteht eine explosionsartige Reaction und es bildet sich ein schwarzes bröckeliges Harz von sabinaähnlichem Geruch. Pikrinsäure löst sich schnell mit dunkelgelber Farbe und rosmarinähnlichem Geruch. Mit Schwefelsäure färbt sich das Oel ziegelroth, dann eine dunkelviolette, harzartige, weiche Masse bildend. Mit Salpetersäure färbt sich das Oel dunkelgrün, die Säure hell carminroth.

Mit rauchender Salpetersäure tritt eine explosive Reaction ein mit purpurrother Färbung. Nach drei Stunden zeigten sich an der Oberfläche sehr kleine silberglänzende Krystallnadeln. Dieselben sind wenig löslich in Alcohol vom sp. Gew. 0.900; in solchem vom sp. Gew. 0.860 in allen Verhältnissen löslich.

20 Kilo frischer Blüthen lieferten durch Destillation 1.950 Grm. ätherisches Oel = 0.009 p. c. Es ist grünlichschillernd, dünnflüssig, von angenehm, etwas jasminähnlichem Geruch. Sp. Gew. bei 15° = 0.836.

Aus 20 Kilo der frischen gestossenen Rinde wurden 20 Grm. ätherisches Oel (= 0.2%) erhalten. Es ist gelb, dickflüssig, von angenehmem, etwas myrtenähnlichem Geruch und aromatisch campherähnlichem, schwach bitterem Geschmack. Sp. Gew. 0.973 bei 15° C. Wird das Oel mit Schwefelsäure erwärmt so entwickelt sich ein starker campherartiger Geruch.

20 Kilo lufttrockener Sägespäne lieferten 180 Grm. eines hellbräunlichen ätherischen Oeles von angenehmem, etwas fenchelartigem Sassafras Geruch und von scharfem, gewürzhaftem, wenig brennendem Geschmack. Sp. Gew. 1.055 bei 25° C.

Dieses Oel hat hier grossen Ruf als Einreibung bei neuralgischen Schmerzen und Rheumatismus, ferner als wirksames Antidot bei Schlangenbiss. Viertelstündlich werden 3 bis 6 Tropfen mit einem Esslöffelvoll Zuckerbranntwein eingenommen und Baumwolle mit Oel getränkt wird auf die Bisswunde gelegt. Die hiesigen Tabaksfabrikanten benutzen das Oel den Cigarettentabak zu aromatisiren und wohlschmeckend zu machen.

Die lufttrockenen Sägespäne verlieren 12% Wasser und geben 1.55% Asche. Sie enthalten: 1) 0.4 Procent eines hellgelben Weichharzes von Terpentinconsistenz, scharf gewürztem Geschmack und angenehmem Geruch, ähnlich einer Mischung von Sassafras und Terpinol. Es verbrennt mit lebhafter Flamme ohne Rückstand. Es ist löslich in Benzol, Chloroform, Aether und absolutem Alcohol. 2) 0.65 Procent einer geruch- und geschmacklosen, festen Harzsäure; und 3) 2.0 Procent eines stark bitterschmeckenden Extractivstoffes.

Das Decoct der Rinde und des Holzes ist der allgemein gebräuchliche blutreinigende Thee des Landvolkes.

Das Holz ist etwas porös, von gelber Farbe, kaum bemerkbar braun geadert. Es wird vielfach zu Möbeln, auch zu Bauten benutzt, nur nicht wo es dem Einflusse der Witterung ausgesetzt ist. Sp. Gew. nach Dr. del Vechio 1.089.

Die Wurzelrinde ist ebenfalls von stark aromatischem Geruch und bitterem gewürzhaftem Geschmack. Die Infusion derselben wie auch die der Rinde der Aeste — 100 Grm. zu 1 Liter Colatur — wird kelchglasweise während des Tages eingenommen, sowie täglich ein Bad mit der Abkochung. Dies ist ein vielfach benutztes Volksmittel bei Rheumatismus.

and the formation of a black, brittle resin of savin-like odor. Picric acid dissolves quickly with dark yellow color and rosemary-like odor. With sulphuric acid the oil takes on a brick-red color, forming then a dark violet, resinous, soft mass. With nitric acid, the oil becomes dark green, the acid bright carmine-red.

With fuming nitric acid an explosive reaction takes place with a purple-red coloration. After three hours, very small, silvery, shining, needle-like crystals appeared at the surface. They are soluble in alcohol, spec. gr. 0.900, to but a slight degree, in alcohol of spec. grav. 0.860 they dissolve in all proportions.

20 kilos of fresh flowers yielded on distillation 1.950 gram of ethereal oil (0.009 percent). It is greenish, opalescent, thinly fluid, with an agreeable, somewhat jasmin-like odor. Spec. grav. at 15° C., 0.836.

From 20 kilos of the fresh, crushed bark 40 grams (0.2 percent) of ethereal oil were obtained. It is yellow, thickly fluid, of agreeable, somewhat myrtle-like odor and aromatic, camphoraceous, slightly bitter taste. Spec. grav. at 15° C. 0.973. When warmed with sulphuric acid, a strong, camphor-like odor is developed.

20 kilos of air-dried sawdust yielded 180 grams of a light brownish ethereal oil with an agreeable, somewhat fennel-like, sassafras odor and a sharp, spicy, slightly burning taste. Spec. grav. at 25° C. 1.055.

This oil is here in great repute as an embrocation for neuralgic pains and rheumatism, also as an effective antidote for serpent's bite. Every fifteen minutes 3 to 6 drops are taken with a tablespoonful of sugar brandy; cotton saturated with the oil is laid on the wound. The local tobacco manufacturers use the oil to increase the aroma and improve the taste of cigarette tobacco.

The air-dried sawdust loses 12 percent water and yields 1.55 percent ash. It contains: 1) 0.4 percent of a light yellow, soft resin of turpentine-like consistence, sharp, spicy taste and agreeable odor resembling a mixture of sassafras and terpinol. It burns with a bright flame without residue. It is soluble in benzol, chloroform, ether and absolute alcohol. 2) 0.65 percent of an odorless and tasteless, firm resin acid; and 3) 2.0 percent of a strong, bitter tasting extractive substance.

The decoction of the bark and the wood is the blood purifying tea in general use among the country inhabitants.

The wood is somewhat porous, of yellow color with scarcely noticeable brown grain. It is much used for furniture, also for buildings excepting only where it is exposed to the influence of the weather. Spec. grav. 1.089 according to Dr. del Vechio.

The root bark has likewise a strongly aromatic odor and bitter, spicy taste. The infusion of the same — as also of the bark from the branches — 100 grams to one liter of colature is given during the day by the wineglassful; also a bath is taken daily in the decoction. This folk remedy is very much employed in rheumatism.

Note on Phospho-Cereal.*

By Prof. *T. H. Norton.*

Among certain semi-remedial products now in use, I had occasion to examine one bearing the name of Phospho-Cereal, which is used to prepare a decoction not unlike coffee in its taste and appearance. The product is said to be obtained by parching the bran of various cereals. Its value is considered to lie in the amount of soluble phosphorus compounds present, and it appeals to those who prefer to use this element as a tonic in a vegetable rather than in a mineral form of combination. It seemed a matter of interest to ascertain just how much phosphorus is present in the commercial article, and how much can be extracted by simple decoction.

The total amount of phosphorus present was ascertained by ignition, solution in dilute nitric acid, and determination by the Handy method. It was calculated as P_2O_5.

2.0486 grams yielded P_2O_5 5.18 p. c.

In determining the soluble phosphorus, samples were boiled with 100 times their weight of water for varying lengths of time. The clear filtrate was used and the Handy method employed in all cases.

The following were the results:

	Weight used.	Decoction, minutes.	P_2O_5 %
I.	1.95 gr.	15	1.29
II.	2.00 "	30	1.43
III.	5.36 "	120	2.40

It is quite evident that ordinary decoction extracts but about one quarter of the phosphorus present; while even prolonged boiling extracts less than one half.

The application of the ordinary tests showed the absence of phosphites and hypophosphites in the aqueous extract, and that the phosphorus was present as phosphoric acid.

I am indebted to Mr. R. W. Hochstetter for carrying out the above phosphorus determinations.

Chemical Laboratory,
University of Cincinnati.

A Prescription-File and Check Blank.

By *Edward Kremers.*

Pharmacists have often complained of the fact, that many people who willingly pay a dollar or more to a physician for a consultation lasting but several minutes and a few written words in form of a prescription, are unwilling to pay half as much or even less for a prescription, the compounding of which requires skill and time, leaving out of consideration the cost of the material employed.

Those who at all peruse medical journals know that similar complaints are made by the members of this profession. Persons who were willing to be treated as charity patients sometimes find money to indulge in an unnecessary change of climate or the like.

It is difficult to fathom the human mind and heart. It might prove equally difficult to find a remedy after the disease had been properly diagnosed. If the pharmacist is a careful observer of himself and his calling it may be easier to find defects in his system which are more readily remedied than the peculiarities of the rest of mankind.

Even intelligent persons, who are able to read the average physician's prescription, sometimes fail to comprehend why they should pay what, considering the sale as a mere business transaction, they regard an enormous price for a simple solution. This feeling is aggravated if an assistant with but little education and training carelessly weighs the salt, thrusts it into the bottle, and fills the latter with water and shakes the contents. While conversing with the customer he licks the label, possibly pastes this over one already on the bottle and hands the medicine to the customer. This is not an exaggeration, but a daily occurrence in some drug stores.

The story is told of a druggist, who with prescription and medicine bottle in one hand walks along the shelves to fill the prescription. He grasps a tincture bottle. He puts it back with an excited air and informs the customer that he came near making a grave mistake and comments on the fatal effects that might have resulted had he not in time discovered his error. Fortunately this is not an every day occurrence.

As a rule prescriptions are compounded where the customer cannot witness the operation. The secrecy of the average prescription counter, however, is not such as to inspire confidence.

Careful pharmacists who have a large prescription trade with several prescription clerks make use of a system of checks by a second person that is too well known to be described here. Such a system is admirable when carried out conscientiously. However, it frequently becomes impossible in most pharmacies and even under the best conditions leaves no record of the check.

Only a few months ago a clerk got into serious trouble for having misread a poorly written and carelessly abbreviated prescription. It would appear from the reports that the physician was guilty of criminal negligence. On the other hand, it would seem that the clerk neglected to compute the dose and when brought into court was accused of having tampered with the prescription.

Errors in the compounding of prescriptions will, no doubt, always occur. It should be possible, however, to lessen the number of errors materially. Although the pharmacist as a rule is the one to suffer most, next to the unfortunate patient, the average pharmacist is inclined to consider strict precautionary methods as a waste of time and unremunerative. Nevertheless, the writer ventures to make a few suggestions with regard to the filing and compounding of prescriptions, which ought

*Read at the Springfield meeting of the American Chemical Society.

For ..... *Age* .....

Received ..... *189*..., *at* ..... *M. By* .....

To be called for .....

No. .....

Compounded by ..... *Delivered by* ..... *with the following remarks:—* .....

..... *Price:* .....

(Paste in prescription and number corresponding to number on blank.)

UNABBREVIATED COPY.

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.....

.....

.....

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.....

.....

.....

Number of doses in prescription.....			
Dose Prescribed.		Maximum Dose.	
Single.	Per diem.	Single.	Per diem.

Copied and computed by ..... *Checked by* .....
Licentiate. Assistant. Licentiate. Assistant.

Remarks on physicians prescription:—

Remarks on compounding of prescription:—

not only to result in greater accuracy and safety, but which may lend to the act that air of care and importance which will impress the customer with confidence.

There is nothing very remarkable about the suggestions. Possibly not one of them is new. In the combination to be suggested they have, however, found some favor with several practicing pharmacists to whom the plan was submitted for criticism. The accompanying blank is largely self-explanatory. The supposed advantages may be enumerated as follows: —

Immediately upon receipt, the physician's prescription is pasted on the left side of the blank and receives the number of the blank. Nothing more is done to the prescription as such, which remains untampered documentary evidence if necessary. If the prescription contains an incompatibility, the correction of which lies within the domain of the pharmacist, attention is called to such incompatibility, the mode of correction being also noted. Any changes in the prescription to enable it to be compounded *lege artis* should also be noted.

In order to guard against misreading, also as a check upon the dose, the prescription clerk makes an unabbreviated copy as documentary evidence of how he read the prescription. At the same time he computes the doses as indicated on the blank and compares these with the maximum doses, which are also recorded. For these he should not rely on his memory, but consult the tables, which might accompany each folio of blanks.

It would also be well to record any words of advise or precaution to be made when the medicine is handed to the patient or customer. The other features of the blank will, no doubt, explain themselves. Whenever possible, the ordinary system of checking should be carried out rigidly.

Such blanks may be bound in folios of 250 or 500 which, being numbered on the back, serve as files. If a prescription is to be refilled months or years after it has been written it can be found as readily as an article in a well classified and indexed library. With it there will be found all the detailed information desired.

In the courts it would impress both judge and jury with the painstaking care with which the prescription was compounded. In case of a mistake a poorly written and recklessly abbreviated prescription would contrast unfavorably with the unabbreviated copy by the pharmacist and would place the proper share of responsibility of error where it ofttimes largely belongs.

No doubt, much of this will seem to many pharmacists as a useless task and a waste of time. The writer by no means expects to witness its general introduction. Several pharmacists, however, have consented to give the blank a trial. When tried it may need modification or may be found too cumbersome.

However, it will possibly be admitted that it has at least some merit and that it may impress persons with the care and sense of responsibility with which prescriptions ought to be compounded. It has been suggested that the compulsory copy and the computation of doses alone would be an admirable training for apprentices and students who are largely initiated into the art of compounding prescriptions in a very reckless manner.

TRANSLATIONS.

Reagents and Reactions known by the Names of their Authors.*

Based on the original collection by *A. Schneider*, revised and enlarged by Dr. *Julius Altschul.*

Schlossberger's reagent for distinguishing textile fibres is a concentrated solution of freshly precipitated (still moist) nickelous hydroxide in ammonia. This solution dissolves silk, but neither wool nor cotton. Compare *Persoz's* reagent.

Schmidt's reagent for glucose is ammoniacal lead acetate solution, which causes a brownish-red precipitate upon warming with glucose solutions (diabetic urine). Cane sugar causes no reduction of the lead salt. Compare *Rubner's* reagent.

Schmidt's nitric acid reaction. Mix the solution to be tested with an equal volume of a solution of 20 drops aniline and 10 g. dilute sulphuric acid in 90 g. water, and pour this mixture in a layer upon concentrated sulphuric acid. If nitric acid was present, a light- to dark-red zone will appear.

Schmitt's test for saccharin in liquids. The strongly acidulated liquid is shaken out three times with a mixture of equal volumes of ether and petroleum ether, these extracts treated with caustic soda solution, evaporated to dryness, and the residue heated for half an hour to 250° C. The solid mass is then dissolved in water, acidulated with sulphuric acid and shaken out with ether. If saccharin was present it is found in the ethereal extract as salicylic acid, which after evaporation of the ether, can be identified by means of ferric chloride.

Schneider's arsenic test. Any arsenic that may be present in the suspected substance is separated as arsenous chloride by distillation with hydrochloric acid and ferric chloride, and is then identified by Marsh's test.

Schneider's test for potassium cyanate in potassium cyanide depends upon the formation of the sky-blue cobalt cyanate. From the highly concentrated potassium cyanide solution, the hydrocyanic acid is removed by means of carbonic acid, the potassium carbonate removed by the addition of alcohol, and the filtrate tested with cobalt acetate solution.

Schneider's test for foreign oils (from *Cruciferæ*) in olive oil. The oil is dissolved in 2 parts of ether, 5 ccs. of a saturated alcoholic silver nitrate solution added, and the mixture allowed to stand for twelve hours in a dark place. If any oils containing sulphur were present, the mixture will be darkened.

Schneider's reaction for bismuth. A solution of 3 parts tartaric acid and 1 part stannous chloride in a sufficient quantity of caustic potash solution gives a black precipitate with a solution of a bismuth salt.

Schoenbein's reaction for blood. See *Almén's* reagent.

* Continued from p. 31.

Schoenbein's reaction for copper. A solution of a copper salt yields a blue coloration upon addition of potassium cyanide and tincture of guaiac.

Schoenbein's test-paper for ozone is filter paper saturated with potassium iodide starch-paste (10 p. starch, 200 p. water, 1 p. potassium iodide). This paper turns blue in an atmosphere containing ozone.

Schoenbein's reaction for hydrogen peroxide is identical with *Boettger's* reaction.

Schoenbein and **Pagenstecher's** reaction for hydrocyanic acid. Strips of filter-paper dipped into a 10 p. c. tincture of guaiac and dried, and subsequently moistened with 0.1 p. c. copper sulphate solution, turn blue in the presence of hydrocyanic acid. Compare *Payer's* test.

Schoenvogel's reaction for distinguishing animal from vegetable oils. Upon shaking with a concentrated borax solution, the latter, olive oil excepted, are said to form emulsions, while the former separate out sharply upon standing.

Schoenvogel's test for foreign fats in butter. 6 ccs. of a saturated borax solution and 5 drops of butter are shaken together at room temperature, or are warmed to the melting-point of the fat. Butter, beef-tallow, Provence oil, and mutton-tallow are said not to emulsify when so treated; all other fats do. Comp. *Levin*, Chem. Ztg., 1895, p. 1852.

Schott's white-lead paper = polka-paper. A sized paper, coated with white-lead, used as an external indicator in titrating solutions of metallic salts with sodium sulphide.

Schotten-Baumann's reagent is benzoyl chloride. See *Baumann's* reagent.

Schroeder's test for acetanilid in phenacetine. Boil 0.5 g. phenacetine with 6–8 ccs. of water, cool, filter out the crystallized phenacetine, boil the filtrate after addition of potassium nitrite and dilute nitric acid, add a few drops of *Plugge's* reagent and boil again. If acetanilid was present, a red color will appear.

Schuchardt's reagent for hydrochloric acid in the gastric juice is concentrated tropæolin solution.

Schultze's cellulose reagent. A solution of 25 p. anhydrous zinc chloride and 8 p. potassium iodide is made in 8.5 p. water, after which as much iodine is added as will dissolve upon slight warming. This reagent colors pure cellulose blue.

Schultze's furfurol reaction for albumens. Upon adding a trace of sugar to a solution of albumens in moderately concentrated sulphuric acid, and warming to 60° C., a beautiful bluish-red coloration appears. See *Raspail's* reaction.

Schultze's maceration liquid, for isolating the individual elements of plant tissues, is nitric acid to which some potassium chlorate has been added. The tissues are boiled for a few seconds in the mixture, whereby the middle lamella is dissolved, after which much water is added.

Schultze's alkaloidal reagent is phosphoantimonic acid. This is prepared by dropping antimonic chloride into aqueous phosphoric acid, or by mixing 4 parts of a saturated sodium phosphate solution with 1 part antimonic chloride. With solutions of alkaloids, this reagent, similar to the related phosphomolybdic and phosphotungstic acids (see *Jungmann's*, *Scheibler's*, *Sonnenschein's* and *De Vry's* reagent), yields mostly white precipitates.

Schulz's salicylic acid reagent. A neutral solution of a salicylate causes a green coloration with copper sulphate solution.

Schumpelitz's veratrine reagent is a solution of fused zinc chloride in dilute hydrochloric acid. Upon evaporating a few drops of this reagent to dryness with veratrine, a red color results.

Schuster's test for coloring matter in beer. Pure beer is said to be decolorized by tannin solutions, while the color produced by caramel is not destroyed under these conditions.

Schwarz's sulphonal reaction. Upon heating sulphonal with charcoal, the odor of mercaptan is developed.

Schwarzenbach-Delf's reagent is potassium platinic cyanide.

Schwarzenbach-Delf's alkaloid reaction. Upon treating with nitric acid and subsequently with ammonia, many alkaloids give characteristic color reactions.

Schweissinger's reagent for alkalies is a solution of equal parts of iodine and tannin in absolute alcohol. Even in very dilute aqueous solutions of alkalies (also carbonates), this reagent produces a red coloration.

Schweitzer's reagent for identifying soaps in lubricating oils is a saturated solution of metaphosphoric acid in absolute alcohol. In the presence of soap, the ethereal solution of the oil yields a white precipitate when treated with this reagent.

Schweizer's reagent for distinguishing textile fibres. Freshly precipitated, washed, and still moist cupric hydroxide or carbonate is shaken with ammonia water (20 p. c.) until a saturated solution results. This solution dissolves cotton, linen and silk, but not wool. The reagent is especially useful in microscopy, since it rapidly dissolves cellulose but has no action on lignin.

According to *Böttcher* this reagent can be prepared by allowing stronger ammonia water to again and again run in a thin stream over copper foil. *Wiesner* prepares it by allowing copper turnings to remain in contact with 13—16 p. c. ammonia water in an open bottle.

Seegen's test for grape sugar. See *Trommer's* test.

Seidel's reaction for inosite. The solution is evaporated to dryness with nitric acid and the residue treated with strontium acetate solution. Inosite causes a violet coloration.

Selmi's alkaloid reagent is prepared by diluting a saturated solution of iodic acid in concentrated sulphuric acid with 6 volumes sulphuric acid.

Another alkaloidal reagent proposed by *Selmi* is a solution of lead peroxide in concentrated hydrochloric acid.

Selmi's test for blood. The (blood-stained) object to be tested is extracted with ammonia, the filtrate precipitated with sodium tungstate and acetic acid, the precipitate after washing treated with a mixture of 1 vol. ammonia and 8 vol. absolute alcohol, filtered, the alcohol removed by evaporation, and the residue treated with sodium chloride and acetic acid. If blood was present, hæmin crystals can be found upon microscopical examination.

Silbermann's reaction for albumen. Albumen freed from fats gives a violet coloration upon heating with fuming hydrochloric acid.

Skraup's reaction for thallin. This substance yields an emerald green color when treated with oxidizing agents as chromic acid, bromine, iodine, mercuric nitrate, or ferric chloride.

Smith's modification of *Maréchal's* test (q. v.) for biliary pigments. Pour tincture of iodine carefully upon the suspected urine so that a zone reaction may be observed.

Snow's mixture for shaking out colchicine consists of 18 ccs. chloroform, 2 ccs. alcohol, 80 ccs. petroleum ether and 10—15 drops of ammonia water.

Soldaini's solution for identifying glucose. 15 g. cupric carbonate are dissolved in 1400 g. water with the aid of 416 g. potassium bicarbonate. Upon boiling this solution with solutions of glucose, cuprous oxide separates out. Compare *Ost's* copper solution.

Sonnenschein's reagents for alkaloids.

I. Cerous hydroxide is suspended in caustic potash solution and chlorine gas passed into the mixture until the formation of the brownish-yellow ceric hydroxide is completed, after which it is collected, washed, and dried. The alkaloid is dissolved in concentrated sulphuric acid and a trace of ceric hydroxide is added. Concerning the resulting color reactions, see *Hager*, Pharm. Praxis I, 207.

II. (Phosphomolybdic acid.) A solution of ammonium molybdate in nitric acid is precipitated with phosphoric acid, the precipitate washed, boiled with nitro-hydrochloric acid to decompose the ammonia, evaporated to dryness, and the residue dissolved in 10 p. c. nitric acid. This reagent yields yellow precipitates with weakly acid solutions of alkaloidal salts (also with ammonia and some other bases).

Compare *Jungmann's* reaction.

Souchère's test for peanut oil. The free fatty acids separated from the suspected oil are dissolved in boiling alcohol. If peanut oil was present, arachic acid separates out upon cooling in characteristic shining crystals.

Spicea's test for salicylic acid (in wine). The wine is extracted with ether; the residue left upon evaporation of the ether is warmed with concentrated nitric acid, then ammonia added in excess. If salicylic acid was present, it is hereby converted into picric acid, which can readily be identified by the yellow color which a woolen fibre assumes when dipped into the solution.

Spiegler's reagent for albumen consists of 8 g. mercuric chloride, 4 g. tartaric acid, 200 g. water and 20 g. glycerin. The suspected urine is acidulated with acetic acid, any resulting precipitate (mucin) filtered out, and the reagent poured in a layer upon the filtrate. In the presence of albumen, a white zone will appear. If the urine contained iodine, there would be found at the line of contact a yellow flocculent precipitate, soluble in alcohol.

The delicacy of *Spiegler's* test depends upon the amount of chlorides in the urine. *Rafaële* therefore proposed to use hydrochloric instead of acetic acid. A reagent which is independent of the chloride content is *Jolle's* reagent (q. v.).

Stahl's reagent paper is filter paper saturated with a 1—5 p. c. cobaltous chloride solution. When dry, it is blue, in moist air it assumes a reddish color, and can therefore be used in hygroscopic determinations. Compare *Merget's* test.

Stas-Otto's extraction test for distinguishing alkaloids. The alkaloids are divided into three groups depending upon their property 1, of being taken up by ether from acid solutions; 2, of being taken up by ether from alkaline solutions; 3, of not being taken up by ether under either condition (morphine).

Stenhouse's caffeine reaction. Upon heating caffeine for a few minutes with fuming nitric acid, evaporating the yellow solution to dryness, and moistening the residue with ammonia water, a purple color results similar to that of murexid, but which disappears upon the addition of caustic potash (while the murexid color is thereby changed to blue).

Storch's test for rosin oil in oil mixtures. 1—2 ccs. of the oil are shaken with 1 cc. acetic anhydride, allowed to stand, the acetic anhydride separated by means of a pipette and treated with a drop of concentrated sulphuric acid. In the presence of rosin oil a violet-red color appears. *Morawski* recommends sulphuric acid of sp. gr. 1.53 instead of the concentrated acid.

Strassburg's reaction. See *Pettenkofer's* reaction.

Struve's test for blood. Suspected stains are extracted with dilute caustic potash solution, the solution filtered and tannin added. If blood was present, the solution is colored reddish-brown, and upon acidulating with acetic acid yields a precipitate which, after washing and treating with acetic acid and sodium chloride, yields hæmin crystals. (See *Selmi's* test and *Teichmann's* hæmin crystals.) Urine containing blood yields a reddish precipitate upon addition of caustic soda and tannin, and subsequent acidulating with acetic acid.

Stuetz's albumen-reagent capsules contain *Fürbringer's* reagent (q. v.).

Tanret's reagent for albumen. 3.32 g. potassium iodide and 1.35 g. mercuric chloride are dissolved in 20 ccs. acetic acid and diluted with water to 60 ccs. With albuminous urine this reagent yields a white precipitate, insoluble in acetic acid. Peptones cause precipitates which redissolve upon boiling; alkaloids, precipitates soluble in alcohol. Compare *Mayer's* reagent.

Tattersal's morphine reaction. Upon addition of sodium arsenate to a solution of morphine in concentrated sulphuric acid, a dirty violet color results which changes to sea-green.

Codeine yields a blue color when so treated.

Teichmann's hæmin crystals as a test for blood. Treat 2—3 ccs. of an aqueous, not too dilute, solution of blood with a few drops of glacial acetic acid and a trace (0.01 g.) of sodium chloride. A few drops of the solution are evaporated on a cover-glass and the residue examined microscopically. The hæmin crystals are rhombic needles or plates of brownish-red to dark brown color.

For applications see *Struve's* and *Selmi's* test.

Thénard's test for aluminium compounds. Aluminium oxide (separated from compounds by igniting on charcoal, with the addition of sodium carbonates if necessary) yields *Thénard's* blue upon igniting with cobalt salts.

Thoulet's liquid is made by dissolving 1 part potassium iodide and 1.239 parts mercuric iodide in water and evaporating this until a pellicle commences to form. The solution then has a specific gravity of 3.196 and is used for the mechanical separation of the constituents of powdered minerals. Compare *Klein's* liquid.

Thresh's reagent for alkaloids is a solution of 1.8 g. potassium iodide in 45 ccs. hydrochloric acid and 30 ccs. of a bismuth solution (Liq. Bism. et Amm. Citr., Brit. Ph.) prepared as follows: 2.5 g. bismuth are dissolved in 70 g. nitric acid, 60 g. of nitric acid are added, then enough ammonia to render weakly alkaline, and enough water to make 600 ccs.

This reagent causes reddish-brown colorations and precipitates with alkaloids.

Tocher's modification of *Baudouin's* reaction for benne oil. 2 g. of pyrogallol are dissolved in 30 ccs. hydrochloric acid (sp. gr. 1.19?), and 15 g. of this solution shaken with an equal volume of oil. After standing and allowing two layers to form, the acid solution is removed by means of a pipette and warmed for five minutes. In the presence of benne oil, a blueish-red color appears.

Tollen's reagent for glucose is an ammoniacal silver solution, obtained by precipitating silver nitrate solution with caustic potash and adding enough ammonia to just dissolve the precipitate formed. This solution is reduced by glucose.

Tommasi's phenol reaction. See *Hoppe-Seyler's* reaction.

Topping's solution is used for imbedding microscopical preparations. It consists of a mixture of 1 p. absolute alcohol and 5 p. water, or in place of the latter, 4 p. water and 1 p. aluminum acetate. The solution is mixed with an equal volume of glycerin before using.

Traub's reagent for hydrogen peroxide is a zinc iodide-starch solution to which copper sulphate and some ferrous salt have been added.

Trapp's veratrine reaction. Upon boiling with concentrated hydrochloric acid, veratrine yields a permanent purple color.

Trommer's test for glucose. Upon adding 1—2 drops of copper sulphate solution and 4—5 ccs. of caustic soda solution to a dilute solution of grape sugar, the precipitate will dissolve and upon heating cuprous oxide separates out. Compare *Fehling's* solution.

For examining urine, this is rendered alkaline with soda lye, then cupric sulphate solution added drop by drop until a permanent precipitate appears. If glucose was present, the yellow cuprous oxide will form upon heating.

To remove other reducing agents that might be present, 10 ccs. of urine are boiled with 5 ccs. copper sulphate solution (1:10), 2 ccs. sodium carbonate solution (1:10) added to the cooled filtrate, the solution filtered after standing, and the filtrate tested according to *Trommer's* test. Compare *Johnson's* reaction.

Trotarelli's reaction for ptomaines. Upon adding sodium nitroferricyanide and subsequently palladium nitrate to the sulphuric acid salts of ptomaines, characteristic color reactions appear. Compare *Vitali.*

Trotarelli's alkaloid reaction. Upon evaporating with concentrated nitric acid and subsequently treating the residue with alcoholic potash solution, various alkaloids give characteristic color reactions. Compare *Vitali.*

Tscheppe's alcohol reaction. 70 p. c. nitric acid is poured in a layer upon the liquid to be tested. If alcohol was present, a green color will appear at the line of contact; after some time bubbles of gas will form and the odor of ethyl nitrite become apparent.

Tuchen's reaction for ethereal oils. Many ethereal oils fulminate when 4—6 drops of the oil are brought in contact with 0.1 g. iodine.

Udransky-Baumann's test for poly-acid alcohols (glycerin, carbohydrates) depends upon *Baumann's* reaction with benzoyl chloride and sodium hydroxide. Since diamines also give this reaction, the presence of the first mentioned compounds must be confirmed by means of the furfurol reaction. See *Molisch's* reaction.

Uffelmann's reagent is a mixture of 1 drop ferric chloride solution, 0.4 g. alcohol, and 100 g. water. This reagent is decolorized by hydrochloric acid; lactic acid colors it yellow, butyric acid causes a milky turbidity.

Ultzmann's test for biliary coloring matter. 10 ccs. urine are shaken with 3—4 ccs. potassium hydroxide solution (1:3) and an excess of pure hydrochloric acid added. In the presence of biliary pigments the mixture assumes a beautiful emerald-green color.

Valenta's test for fats. Equal volumes of fat and glacial acetic acid (sp. gr. 1.0562) are intimately mixed in a test tube; if the oil does not dissolve in the cold, apply heat. 3 classes of oils are distinguished, depending upon whether solution results at ordinary temperatures, at temperatures up to the boiling point of glacial acetic acid, or whether even then, solution is incomplete. Further, in the case of oils dissolving upon application of heat, the temperature is observed at which, upon cooling, turbidity first appears.

According to *Bach*, the same observations made with *David's* alcohol acetic acid (q. v.) and the free fatty acids separated from the fats, give good results.

Valentine's reaction for fuchsin. Upon shaking ether with a solution containing fuchsin, the ether does not dissolve the coloring matter, but upon adding ferrous iodide, the ether is colored violet.

Valser's reagent is potassium mercuric iodide.

Van Deen's test for blood. Upon adding a few drops of freshly prepared tincture of guaiac resin and a little ozonized oil of turpentine to a highly diluted solution containing blood, a blue color results.

Vetere's test for castor oil. See *Di Vetere.*

Villavecchia and **Fabri's** modification of *Baudouin's* test for benne oil. Reagent: 2 g. furfurol in 100 ccs. alcohol.—10 ccs. oil are shaken for ½ minute with 0.1 cc. furfurol solution and 10 ccs. hydrochloric acid (sp. gr. 1.19). A red coloration indicates benne oil.

Villier and **Tayolle's** reagent for hydrochloric acid and chlorine. Even traces of chlorine cause in acid aniline solution (400 ccs. saturated aqueous aniline solution, 100 ccs. glacial acetic acid) brownish to black precipitates; with aniline solutions containing ortho-toluidin (100 ccs. saturated aqueous aniline solution, 200 ccs. saturated aqueous ortho-toluidine solution, 30 ccs. glacial acetic acid), a blue coloration results. Bromine and iodine cause no color reactions with above mixtures, although bromine yields white precipitates. To apply this test to the halogen hydracids, the halogens are liberated from their combinations by heating with dilute sulphuric acid and potassium permanganate.

Violette's solution for testing for glucose is identical with *Fehling's* solution (q. v.).

(To be continued.)

MONTHLY REVIEW.

Chemistry.

Piperidine Guaiacolate.

This compound, $C_5H_{11}NC_7H_8O_2$, has been prepared by Schidrowitz by the action of piperidine on guaiacol dissolved in benzene or petroleum ether. It crystallizes in prismatic needles or plates, melts at 79.8° C., is soluble in water to the extent of 3.5 p. c., and also easily soluble in most organic solvents. Mineral acids and alkalies decompose it into its constituents. It has been used in the treatment of phthisis by Chaplin and Tunnicliffe, who suggest that its pharmacology resolves itself into that of guaiacol and piperidine, as the compound is decomposed into those substances, probably in the alkaline medium of the duodenum. The solubility of the guaiacolate is remarkable when contrasted with that of guaiacol carbonate. Thus, ten grains can be administered in an ounce of water or, if a little glycerin or mucilage be added, as much as thirty grains can be conveniently given at once.

[Pharm. Journ. 58, p. 82; Br. Med. Journ. No. 1881, p. 136.]

Reduction by Calcium Carbide.

The use of calcium carbide as a metallurgical reducing agent is described by H. N. Warren. An excess of litharge being heated to redness with the carbide, metallic lead and calcium oxide result, the reaction being accompanied by a vivid incandescence. When the carbide is in excess, carbon dioxide is evolved, and a regulus of calcium and lead obtained, of varying percentage according to the temperature employed. The alloys thus formed are more or less brittle and to a certain extent sonorous when struck. Their melting points rank below that of pure lead, and they are slowly but completely decomposed in contact with aqueous vapor, the reaction being much less energetic than that afforded by alloys of lead with the alkali metals. Stannic, cupric and ferric oxides are readily reduced by the carbide, but yield results of no practical value, whilst manganese, nickel, cobalt, chromium, molybdenum and tungsten oxides yield calcium alloys on reduction.

[Pharm. Journ. 58, p. 81; from Chem. News 72, 2.]

On the Active Principle of Frangula Bark.

As active principle of frangula bark Kubly isolated a glucoside which he termed frangulic acid. This fact was also examined pharmacologically and verified. Kubly prepared his acid by precipitating the aqueous extract, evaporated in vacuum, with absolute alcohol. The product thus obtained was amorphous and contained as much as six percent of calcium and magnesium salts.

Since then frangulic acid has not been reexamined. Besides the acid frangulin has been isolated from the bark (0.07%) and examined particularly by Schwabe. Frangulin is a glucoside and splits up into rhamnodulcite and trioxymethylanthraquinone (emolin).

E. Arveng has recently examined Kubly's frangulic acid. Upon hydrolysis with 5 p. c. aqueous hydrochloric acid (10 minutes) it breaks up into: 1) a sugar which reduces Fehling's solution in the cold, does not ferment, is not sweet, turns the plane of polarized light to the right and condenses to a yellow crystalline product with phenylhydrazine; 2) a reddish-brown powder, sparingly soluble in water, but soluble in the ordinary organic solvents. This latter compound is possibly the pure frangulic acid of Kubly. Whether it is identical with frangulic has not yet been determined. It is also a glucoside and can be hydrolized by boiling the alcoholic solution with hydrochloric acid. A sugar and a substance insoluble in water result. The latter sublimes with partial decomposition in the form of orange needles. This substance like the second glucoside dissolves in alkalies with cherry-red color. The identity of this substance with emodin is suspected, but still an open question. It is suggested that the second glucoside, which like the first possesses cathartic properties, may prove useful for assay purposes.

[Journ. d. Pharm. f. Elsass-Lothringen, 24, p. 1.]

Botany and Pharmacognosy.

Adulteration of Pimento.

Mr. C. A. Macpherson reports finding commercial pimento of a reddish color differing from that usually seen. Closer examination showed a dull, earthy appearance. The coloring matter, insoluble in water, was removed by washing. An analysis of the chemical so obtained proved it to be ferric oxide.

[Chemist and Druggist, 50, p. 117.]

Testing Muskpods by Means of X Rays.

In a recent number of the *Pharm. Centrh.*, Dr. Wolff demonstrated the efficiency of the Roentgen rays to detect metallic adulterations in muskpods. Bits of such materials gave distinct black spots in the resulting "picture." The *Chemist* and *Druggist*, however, calls attention to the fact that paper, blood clots and such impurities cannot be detected by this process.

[Chemist and Druggist, 50, p. 129.]

Manna in Australia.

Messrs. R. T. Baker and H. G. Smith state that true manna is found in Queensland on what is known as "bluegrass," *Andropogon annulatus*. The substance is found on the nodes of the stem in masses as large as marbles. This, it seems, is the first time that a substance of this character has ever been detected on a grass. The grass is indigenous not only in Australia, but also in tropical Asia and Africa. The manna is sweet and contains nearly 75 percent of mannite. Besides the mannite, the manna contains a peculiar ferment, which seemingly has the power to decompose cane sugar without the evolution of carbonic acid or gases of any kind. It probably belongs to the *Saccharomycetes* and is allied to the ferments of which the yeast plant is a type.

[Chemist and Druggist, 50, p. 260.]

Saffron.

Saffron from Eastern countries will be regarded with disfavour if a report appearing in the Daily News should be confirmed. According to the Vienna correspondent of that paper, the Sanitary Council of Con-

stantinople has resolved, on account of the plague, to prohibit pilgrimage from India and Persia to Kherbela, a favorite place of burial with the Shiïtes and other Indian sects. It is said to be the custom for the bodies of wealthy Shiïtes to be laid aside until a caravan leaves for Kherbela, and, the report proceeds, "the dead are sown up in carpets with large quantities of saffron to preserve them. At Kherbela the bodies are buried, and carpets and saffron are sold to European dealers." "Saffron may not be any the worse for this treatment, but most people would prefer it in its virgin freshness" is the opinion of an Englishman.

[Pharm. Journ., 1897[1], p. 112.]

Eucalyptus rostrata and its Kino.

In a recent article on this subject by J. H. Maiden, many interesting facts are brought out. The protean genus *Eucalyptus* contains a large number of species which differ among themselves in, among other things, their barks. Some have rugged, dense, hard barks, known as "iron barks." Others have very fibrous barks which strip off in long pieces or even sheets used for roofing in parts of Australia, called "stringy barks." Others have wooly, matted barks and are known as "box." All these belong to the rough-barked varieties. Others have smooth barks and go by the name of "gums" or "gum trees." The rough-barked species produce gum (kino) as abundantly or even more so than the smooth-barked kinds, but the stain of the gum on the latter is more apparent. Perhaps for this reason the term "gum" in common parlance has become to be applied exclusively to the smooth-barked forms.

The kino is procured in the following manner: The men employed in collecting it look for the trees from which the substance is or has recently been exuding, and cut into the tree till they get beyond the gum-yielding tissues. A trough-shaped piece of tin is then inserted into the hole and the kino flows into a receptacle provided for the purpose. When the kino exudes, it is of the consistency of molasses and has a sourish odor. In a few days it dries into a solid mass which subsequently becomes quite friable. It is owing to this property that this kino, as well as other kinds of the "turbid" group, cannot be collected in a hardened condition by simply picking from the bark. As much as four gallons have been procured from one tree, but this is exceptional. On an average, not more than one quart per tree is obtained, and from a majority of the trees no appreciable quantity is obtained by tapping. The usual price paid on the Murray River, Australia, at the present time for liquid kino is 7 d. per pound. A good workman can procure between ten and twelve pounds per day of the liquid kino. It loses but little weight in drying. [Am. Journ. Pharm. 69, p. 1.]

Mastic.

It is well known that the bulk of the mastic of commerce is supplied us by the small island of Scio (Chios) and that it is the product of *Pistasia Lentiscus*. The male bushes yield by far the largest quantity of resin. An allied species, *P. Terebinthus*, also growing in Scio, yields another well known product, Chian turpentine. This bush or small tree also grows in Cyprus, and, it is said, furnishes a considerable quantity of mastic all of which is used locally for chewing and as a drug. It is multiplied by suckers and layers and is planted at distances between to allow a circulation of air amongst the plants for the purpose of drying the resinous exudation which occurs either spontaneously or by pricking the stems. The principal labor in the cultivation of the shrub is said to be the pruning and picking of the plant, which is done from the middle of July to the end of September. By the system of pruning adopted, the shrub is converted into the shape of a small tree with sparse, spreading branches, so that the resin may be gathered conveniently and the ground beneath kept clear. The wounding of the stem and the principal branches is done with a tool of the shape of a small chisel. From the wounds the resin exudes in the form of small tears, which in a few days become dry. This is gathered by being detached from the stem and branches by another tool also resembling a small chisel, but bearing at the end a round plate of about half an inch in diameter, serving as a scraper. The gum gathered direct from the shrub in a condition resembling pear shaped grains, is mastic of the first quality, whilst that dropping on the ground as well as that accumulated on the stem and branches in lumps, being more or less mixed with earth, bark and other foreign matter, forms mastic of the second or third qualities. Though mastic is, for trade purposes, produced almost exclusively in Scio, there seems to be no reason why it should not be readily obtained from other islands of the Greek Archipelago. The exports from Scio go chiefly to Constantinople and other parts of Turkey as well as to Trieste, Marseilles and Vienna and, in smaller quantities, to England. The yield per tree is very small, averaging, it is said, not more than 8 to 10 pounds per annum.

[Chemist & Druggist, 50, p. 273.]

Practical Pharmacy.

Extemporaneous Chlorine Water.

Chlorine water can be extemporized by the action of sulphuric acid on sodium chloride in the presence of minium or litharge with the requisite amount of water. The reaction is expressed by the following equation: $3H_2SO_4+2NaCl+Pb_2O_3=2PbSO_4+Na_2SO_4+3H_2O+2Cl$. Inasmuch as such a preparation contains sodium sulphate Griggi suggests the use of oxalic acid in place of sulphuric acid, and of calcium chloride for sodium chloride. The resulting calcium and lead oxalates are insoluble. $2C_2H_2O_4+PbO_2+CaCl_2=C_2O_4Ca+C_2O_4Pb+2H_2O+2Cl$.

[Pharm. Wochensch., 14, p. 87; from Bollet. chimic farmaceut., 1896.]

Assay of Tincture of Strophanthus.

For the assay of strophanthus preparations, whose strength is liable to vary greatly on account of the great differences in the crude drug, J. Barclay has recently recommended an indirect method, after numerous attempts to secure a direct method for the estimation of strophanthin had failed. Barclay made use of the fact that strophanthin by hydrolysis is easily converted into the chloroform-soluble strophanthidin, 36.5 p. of

which correspond to 100 p. strophanthin. The method of procedure is as follows: 50 ccs. of the tincture are mixed with a like volume of water and the alcohol is removed by evaporation on the water-bath. The remaining aqueous solution is filtered, shaken with chloroform, and then digested for an hour with dilute sulphuric acid on the water-bath. The liquid will become turbid owing to the formation of a flaky precipitate, which after cooling is dissolved by shaking three times with small portions of chloroform. The chloroformic solutions are mixed, the chloroform removed by distillation, the residue dried at 65° C. and the weight divided by 0.365 to give the amount of strophanthin in 50 ccs. of the tincture.

[Pharm. Journal, 1896, p. 1379; Pharm. Zeitung, 41, p. 880.]

Morphine as an Andidote in Potassium Cyanide Poisoning.

Dr. L. Heim reported in the Münch. med. Wochenschrift as follows:

A dog, which was to be killed, was given an hypodermic injection of 0.4 g. morphine, and an hour later, to hasten death, a lethal dose of potassium cyanide. Contrary to expectation, not only did the symptoms of morphine poisoning decrease, but also the effects of the cyanide did not become noticeable for a considerable time; death did not occur until two hours after the administration of the potassium cyanide. This observation, in which potassium cyanide seemed to act as an antidote to morphine, led the author to investigate whether conversely, by the subcutaneous injection of morphine in non-fatal doses, a fatal dose of potassium cyanide could not be rendered harmless.

Experiments on mice proved beyond doubt that by the prompt injection of morphine these animals could be saved from an otherwise sure death from potassium cyanide poisoning, or at least, in most cases, death could be greatly delayed. Of ten mice so treated, six were saved, three died within three hours, and only one succumbed as rapidly as the control animals, all of which died within ½ hour.

The author believes that this favorable action is due to the fact that potassium cyanide and morphine in the presence of iron of the blood form oxydimorphine and Prussian blue, both of which are comparatively harmless.

[Münch. med. Wochenschrift, 1896, No. 37; Therap. Monatsh., 10, 576.]

Agar Suppositories.

Prof. L. Lewin and Dr. Eschbaum have recently studied the methods of preparation and the action of various suppositories, and published their results in the D. Med. Wochenschrift, 1897, No. 2.

The requirements which a suppository should fulfill are, according to Prof. Lewin, as follows: The medicament should be uniformly distributed throughout the mass and should free itself easily and rapidly from the vehicle. The suppository should be sterile, or nearly so, should be easy of introduction, and should contain an exact dose of the incorporated medicament.

Experiments with cacao butter as a base showed that a uniform distribution of the medicament as well as an accurate dosage of the same could only be accomplished by rubbing up the ingredients with the fat, and subsequently rolling the mass into cylinders and dividing on a pill tile. The method of casting suppositories in moulds, except where the medicament was soluble in the fat, never yielded an exact dosage nor uniform distribution throughout the suppository, as was proved by actual analysis. The use of suppository shells should of course, for the latter reason, never be practiced.

Glycerin-gelatin suppositories, according to the authors, are preferable to cacao-butter suppositories in every respect. Not only can an exact dosage be more readily attained with the former, but the suppositories can also be introduced with less difficulty, and the medicament is more easily resorbed than is the case with the latter. The objections however to these suppositories are that they are generally not sterile, that the gelatin employed often contains basic and other products that might be injurious to the human organism, and that the glycerin they contain might cause a local irritation of the intestines.

On this account, Lewin and Eschbaum recommend the use of agar as a suppository base. Upon heating 1 p. of commercial finely powdered agar for a few minutes on the water-bath with 20 p. of water, a mass results which can easily be poured, but which upon cooling forms a slippery, elastic, tough resistant mass.

Agar has an acid reaction; in the manufacture of the agar-gelatin it is neutralized by the addition of 0.1 g. of sodium carbonate to 10 g. of the powdered agar. The directions for the preparation of agar-suppositories are given as follows: One part of neutralized agar is placed in a small prescription bottle together with the required quantity of the (water-soluble) medicament, 29 p. of water added, the mixture shaken, the cork tied firmly to the neck of the bottle and the bottle placed for 5—10 minutes in boiling water. Pieces of paraffin-paper, about 4 ccm. square and rolled to form hollow cones are best employed as moulds. These can be placed in a light wooden frame upon a suitable balance and the required quantity of the hot agar mass poured into each. The suppositories are kept in the paper moulds until required for use.

Some medicaments, as mercurial ointment and bismuth subnitrate cannot be formed into suppositories by the above method, but must be rubbed up with the agar mass. Antipyrine requires a larger proportion of agar than indicated in the general formula, a mass of 10% antipyrine requiring twice, one of 50%, three times the above quantity. Tannin suppositories are prepared without the application of heat. 1. p. tannin and 2 p. powdered agar are mixed and kneaded with 7 p. of water; the mass is then rolled into cylinders and divided into required number of parts. Almost all medicaments can readily be incorporated with the agar mass to form homogeneous mixtures. Vaginal suppositories and bougies can also be prepared with an agar mass by employing suitable moulds. For the former, a wooden block with cavities of the desired shape and size is very convenient; the cavities are lined with parchment or wax paper, pressed into them by means of a suitable plunger.

New Remedies.

(Continued from p. 37.)

Euquinine or Euchinin is quinine carbonic acid ethyl ester. According to C. O. Noorden (Pharm. Ztg., 1896, p. 857; from Pharm. Post, 29, p. 564; from Ctrlbl. f. inn. Med.) it was introduced by the Frankfurter vereinigte Chininfabriken. When, none of the abstracts mention; presumably in 1896.

Ethylene diamine kresol, or rather ethylene diamine-trikresol, is a product made by the Chem. Fabrik auf Actien, formerly E. Schering, in the attempt to prepare antiseptics that will not coagulate albumen. The Pharm. Centrh. for 1894, p. 180 and 305 reports on the chemical experiments. According to Pharm. Ztg., 1896, p. 695 Baer reported at the Frankfurt (1896) session of the Society of German Scientists and Physicians on the clinical tests made by Schaefer during the course of a year. Although the compound was introduced chemically in 1894, its therapeutic introduction was made in 1896.

Formaldehyde caseïn. A condensation product of caseïn and formic aldehyde, introduced by Merck. The first clinical reports appear to have been made by Dr. E. Bohl in No. 38 of the Muench. Med. Wochensch. It is said to have properties similar to glutol, obtained by the action of formic aldehyde on gelatin. See also Merck's Market Report, 5, p. 570.

Formopyrine. E. Marcourt described in the Bulletin of 1896 this substance as a new compound obtained by the action of formic aldehyde on antipyrine. F. Stolz, however, showed in the Berichte for the same year, p. 1826, that this compound had been discovered twice previously and refers to Pellizzari (Gazz. chim. it., 19, p. 413; Ann. d. Chem., 225, p. 246,) and to Schuftan (Ber. 28. p. 1180). The name alone, therefore, is new.

Galactochloral. A compound similar to xylochloral and chloralose, obtained by Hanriot (C. r. 1896, June 18.) by heating galactose and chloral in the presence of hydrochloric acid.

Glutoform. An antiseptic prepared from formic aldehyde and gelatin by the chemical factory Rhenania, which is said to be quite distinct from glutol or formaldehyde gelatin (also formalin gelatin). It was introduced in 1896.

Glutol. The fact that formaldehyde hardens gelatine has been known for some time. Although the compound does not appear to act antiseptically in cultures, Schleich (Therapeutische Monatshefte, 10, p. 27) has observed that it acts as an antiseptic on wounds. A lively controversy has arisen as to chemical nature and therapeutic effect. The arguments are presented principally in a number of communications to the Therap. Monatsh. for 1896. A partial summary can be found in the Pharm. Centrh., 37, p. 483. Schleich's first communication was sent in Dec. 1895 but published in Jan. 1896. Schleich's formalin gelatin is prepared by the apothecary Kohlmeyer of Berlin. The use of gelatin hardened by formaldehyde for capsules to be resorbed by the small intestines is discussed by Weyland on p. 180 of the Th. Monatsh. for 1896. Compare also Proc. A. Ph. A., 44, p. 486.

Guaethol, pyrocatechinethylether, corresponding to guaiacol, the methyl ether of pyrocatechin, which it is to replace on account of more satisfactory action. This at least is the opinion of Prof. v. Mering. It is prepared by Merck and not to be confounded with the ethylene ether, guajacolum aethylenatum, $CH_3O.C_6H_4O—C_2H_4—O.C_6H_4OCH_3$, of the same manufacturer. (Comp. Merck's Ber. für 1895). According to Kremel (Pharm. Post, 29, p. 582), ethyl ether of guaiacol is termed ajacol by the chemical manufacturer Dr. Heyden, and thanatol by Dr. Ilosvay in honor of Prof. Than.

Guaiacolum aethylenatum. See also under guaethol. This compound was patented March 17, 1894. It was examined therapeutically by Dr. v. Oefele, evidently in 1895. Merck includes it in his report for that year.

Guaiacetin. Pyrocatechin monocarbonic acid $C_6H_4(OH)O.CH_2.COOH$, is obtained by introducing a carboxyl group into the methyl group of guaiacol. A clinical report was made by Strauss in the Centralbl. f. inn. Med., 1896, Nr. 25.

Guaiacol valerianate or "Guaiacolum valerianicum." According to Pharm. Ztg., 1896, p. 497, this substance has been introduced by the apothecary Lehmann of Berlin. Like Kreosotum valerianicum it is to be used against tuberculosis. Information with regard to this substance appears to be scant. The trade mark name is "geosot."

Hæmolum bromatum. This compound is mentioned by Merck in his report for the year 1894. Clinical examinations are reported as being in progress but not completed. Clinical reports were made by Holst in 1896, (Pharm. Centrh., 37, p. 621; from Deutsche Med. Ztg., 1896, 592).

Imidiod. References in pharmaceutical journals evidently can be traced back to Merck's Market Report for 1896, p. 454. Since this journal in this instance, like several others, does not mention the source of its information, the matter was not traced farther. This new antiseptic is said to be obtained by heating p-ethoxysuccinimide, potassium iodide, and iodine in diluted acetic acid. It is described as lustrous, rhombic crystals that melt at 175°. From the description it appears not to be what its name purports, and evidently should not be confounded with iodoimide I_2NH.

Iodoformine or hexa methylene tetramine iodoform seems to have been first prepared by A. Eichengruen and introduced by L. C. Marquart of Bonn. It is mentioned in both the Pharm. Ztg. and the Pharm. Centrh. for 1895.

Iodosinum. Compare bromosinum. This is the corresponding iodine derivative guaranteed to contain 15 p. c. iodine.

Itrol, silver citrate was reported on by Credé together with Atrol, q. v., in Jan. 1896.

Kosotoxin. This substance, $C_{26}H_{34}O_{10}$, which is stated to be the physiologically active principle of the koso flowers, was isolated by Leichsenring in 1893 (Arch. f. Pharm. 232, p. 50). It was examined by M. Handmann in the Pharmacological Institute of Leipzig, according to whom it has a strong poisonous action on the muscles, but little effect upon the central nervous system. This report (source of information not given), which seems to have been made in 1895 or very early in 1896, evidently caused the enumeration of the compound among the new remedies introduced last year.

Kreosotem valerianate or "Kreosotum valerianicum." The valerianic ester of creosote was prepared by G. Wendt and examined therapeutically by E. Grawitz. It is manufactured and sold under the trade mark name "eosot" by the apothecary Lehmann of Berlin. It is said to be neither irritating nor poisonous and is used in tuberculosis. (Therap. Monatsh., 1896, p. 384).

Lactyltropeïne, a condensation product of lactic acid and tropine. It was not introduced in 1896, but earlier. (Pharm. Centrh. 37, p. 73; 36, 261; and 35, p. 614.)

Lentamine. According to Zimmer & Co's Report (Frankfurt a. M.) this is an alkaloid from *Lentana brasiliensis*. Bueza and Negreta are said to recommend it highly as an antiseptic. No further references are given in the Pharm. Ztg., 1896, p. 90, and from the little information contained in the note, its date of introduction would seem to precede the year 1896.

Levulochloral. Compare galactochloral. A compound ($C_8H_{11}Cl_3O_6$) likewise prepared by Hanriot. It melts at 228°, is readily soluble in water and alcohol, more sparingly in ether.

Lithio-piperazine. This compound of lithium and peperazine was introduced by L. C. Marquart of Beuel, evidently in 1896. It is readily soluble in water, is even hygroscopic and is supposed to combine the solvent power of piperazine for urea and the diuretic effect of lithium. (Pharm. Ztg., Nos. 56 and 64).

Lithium Bitartrate. According to Beilstein (3rd ed., vol. 1, p. 791) this salt was first prepared by Schabus in 1854. The fact that Merck in his report for 1895 (Bericht, p. 98) refers to the use of this salt in America under the name of tartarlithine, evidently has caused it to be enumerated with remedies introduced in 1896. Merck refers to the Lancet (June 30, 1894) and to Dental Cosmos (Sept. 1894) as the source of his information.

Malarine. This new antipyretic and neuralgic is made by Valentiner Schwarz of Leipzig-Plagwitz. It is the citrate of acetophenonephenitidide, a condensation product of acetophenone and p-phenetidine, $C_2H_5O.C_6H_4N{=}(CH_3)C_6H_5$. It melts at 88° and is but sparingly soluble in the ordinary solvents at low temparatures. (Pharm. Ztg., pp. 672, 829, 865).

Mydrol or iodo-methyl-phenyl-pyrazolone. According to the Pharm. Centrh., 1896, p. 718, this compound was prepared by Barbiano: when, is not stated. The Centrh. reports principally on the examination of Cattaneo (Boll. della soc. mediche 1896, April), who states that it is a mydriatic but that the mydriatic action is not as complete as with atropine. It is not to be confounded with mydrine, which is a mixture of ephedrine and homatropine.

Naphthol-bismuth, or bismuth β-naphtholate, is a compound which according to Schmidt (Pharm. Chem. II, p. 1048) possibly has the composition $C_{10}H_7O(BiO)$; according to B. Fischer (Die Neueren Arzneimittel, 6th ed., p. 28) the composition is expressed by the formula $Bi_2O_2(OH).(C_{10}H_7O)$. Inasmuch as Schmidt's work was published in 1895 and Fischer's sixth edition in 1894, this compound cannot very well have been introduced in 1896.

Nutrose. In 1894 Roehmann delivered a lecture before a section of the Naturf. Vers. in Vienna (Pharm. Centrh. 35, p. 636) on the nutritive value of the sodium- and other saltlike compounds of caseïne. It would seem as though the introduction of the trade name, nutrose, evidently by the Farbwerke in Hoechst a. M. (Pharm. Centrh. 37, p. 718) was the cause for its enumeration with remedies introduced last year. The nutritive value of this substance has been examined by others as well as by Roehmann. See also Pharm. Post 29, p. 480.

Oxycamphor. This compound $C_{10}H_{15}O(OH)$ has been known for a number of years. According to the Pharm. Ztg., 1896, p. 696, R. Heinz recommended it against asthmatic troubles at the time of the Naturforscherversammlung at Frankfurt (1896).

Oxysparteïne hydrochloride was prepared by F. B. Ahrens and reported upon by him in 1891 (Ber. d. d. chem. Gesellsch., 24, p. 1095). It has repeatedly found its way into pharmaceutical literature since then. The statement of Langlois and Maurange (source of information not given) that it was better adapted than sparteïne to avoid interference with heart action during chloroform narcosis seems to have been the cause for classifying it with remedies introduced last year. See Pharm. Ztg., 1896, p. 672; also Ph. Centrh., 1896, p. 134.

Parachlorphenol. According to Beilstein, p-chlorphenol was first prepared by Dubois in 1866 (3rd ed. II, p. 669.) The Pharm. Centrh. for 1891 contains two articles (pp. 361 and 725) on the use of chlorphenols and chlorphenol resp. as antiseptics, without, however, specifying which isomer was used. In the same journal for 1894 (p. 557) is contained an abstract of Eisenberg's article on the use of parachlorphenol in the treatment of lupus. The same journal for 1895 (pp. 62 and 107) contains two more notices about the same substance. It can, therefore, hardly be considered as having been introduced in 1896, merely because Sprengler recommended its use in a certain form of tuberculosis in that year. (Pharm. Ztg., 1896, p. 108.)

Phenetidine citrate. The mono- and di-phenetidine citrates obtained by the condensation of p-amidophenetol with citric acid in varying proportions. The process is patented by von Heyden in Dresden-Radebeul.

Monophenetidine citric acid has the formula $C_3H_5O.(COOH)_2.CONHC_6H_4OC_2H_5$; diphenetidine critic acid the formula $C_3H_5O(COOH)(CONHC_6H_4OC_2H_5)_2$. Both are sedatives, antipyretics, and analgetics. (Pharm. Ztg. 1896, p. 511.)

Pellotine. In 1894 (Ber. 27, p. 2975) Heffter made his first chemical report on pellotine and anhalonine, two alkaloids obtained from the cactus family. Since then he has made several chemical and pharmacological reports. See this journal, vol. 14, p. 153, and the Therap. Monatsh., vol. 10, p. 327. The latter journal (p. 328) contains also Jolly's report on the hypnotic effect of the alkaloid.

Pyrantine, or p-ethoxyphenylsuccinimide or phenosuccine, $(CH_2CO)_2N.C_6H_4.O.C_2H_5$, was prepared by A. Piutti. It is but sparingly solnble in water (1:1317). The soluble pyrantine of the same chemist is the sodium salt of p-ethoxyphenylsuccinamic acid, $NaOOC.C_2H_4.CO.NHC_6H_4.OC_2H_5$. It is readily soluble in water and has the same physiologic properties as the insolnble pyrantine. Both are antiseptics and are prepared for the market by the Farbwerke at Hoechst. Prof. Piutti's

first article appears to have appeared in Aug. of 1895 in the Archivio Internazionale delle Scienze medico chirurgiche. A German translation appeared in the Arch. f. Pharm., 1896, p. 161. (14, p. 66; comp. also this vol., p. 15.)

Quinaphtol or Chinaphtol is β-naphthol-α-mono-sulphonate of quinine. According to Pharm. Ztg., 1896, p. 829, and Pharm. Centrh., 37, p. 829, (from Wiener med. Bl., 1896), this substance was first prepared by E. Riegler and is manufactured by E. Merck.

Quinine hydrochlor-sulphate. Georges in the Journ. de Pharm. et de Chim., 1896, 12, reports the results of his examination of various commercial specimens. He finds both anhydrous and hydrated salt and does not consider the preparation as a chemical unit but as a mixture, for reasons (as quoted in the Pharm. Ztg., 1896, p. 453), which are not readily comprehensible. When the compound was introduced in France is not stated.

The Am. Journ. Pharm., for 1893, vol. 65, p. 174, contains an abstract from the Compt. rend., with regard to its preparation. The same journal on p. 492 contains an abstract from the Suedd. Apoth. Ztg., 1893, p. 339 with regard to a German patent. The fact that a Frenchman examined several commercial specimens in 1896 can hardly be considered sufficient reason for stating that it was introduced during that year.

Salhypnone. The benzoyl derivative of methyl salicylate was prepared by H. Voswinkel, and apparently first reported on in 1896. It is reported to have no particular physiological action. Pharm. Ztg., 1896, I, p. 159.

Sanoform. According to the Pharm. Ztg., (1896, p. 320 and 418), diiodo salicylate of methyl was prepared by A. Gallinek and E. Courant in the summer of 1895. Like methyl salicylate it is said to be a powerful antiseptic and is recommended as a substitute for iodoform.

Stypticine is a recently invented synonym for cotarnine hydrochloride, known for a number of years. In Merck's Bericht for 1894 attention is called to the fact that the hydrochloride of this opium alkaloid on account of its solubility and permanence would be best adapted to physiological experiments. In 1895, at a medical congress at Vienna, Gottschalk reports on the styptic properties of this compound "prepared by Merck." (Pharm. Centrh., 36, 410). This seems to explain the newness of this remedy.

Tannoform, or methylene ditannin, a condensation product of formic aldehyde and gallotannic acid was first prepared by Merck. He reported on the chemical and therapeutical properties of the compound in his Bericht for 1895. In this report he also calls attention to a lecture delivered by W. M. Frank in Berlin, Dec. 3, 1895 on the dermatological value of this compound. It was, therefore, introduced therapeutically as well as chemically in 1895.

Tetraallylammoniumalum, $N(C_3H_5)_4 . Al_2(SO_4)_3 + 12H_2O$, was prepared by Orlow (Pharm. Zeitsch. f. Russl., 1895, p. 755) evidently in 1895. Inasmuch as tetraallylammoniumhydrate readily dissolves uric acid the Russian chemist expects this alum to become of use in medicine as a uric acid solvent.

Literary.

Books and Pamphlets Received.

Am. Pharm. Assn.—Baltimore. Proceedings of the A. Ph. A. at the forty-fourth annual meeting, held at Montreal, Canada, August, 1896. Also the constitution, by-laws and roll of members. One vol., pp. XXVIII, 963. 1896.

F. C. W. Vogel–Leipzig. Grundriss der Arzneimittellehre. Von Dr. Oswald Schmiedeberg. Dritte umgearbeitete Auflage. Ein Bd., pp. x, 386. 1895.

Ginn & Company—Boston. Inorganic chemical preparations. By Dr. Frank H. Thorp, Instructor in Industrial chemistry in the Mass. Inst. of Techn. One vol., pp. IV, 238. 1896. $1.60.

Hermann Heyfelder — Berlin. Chemisch-technisches Repertorium. Herausgegeben von Dr. Emil Jacobsen. 35. Jahrgang. 1896. Erstes Halbjahr. Zweite Hälfte. pp. 117—283. 1897.

State of Wisconsin — Madison. Biennial report of the Dairy and Food Commissioner. For the years 1895—1896. One vol., pp. 315.

E. R. Squibb and Sons—Brooklyn. An ephemeris of materia medica, pharmacy, therapeutics and collateral information. Vol. IV, No. 5. pp. 1759–1923. By E. R. Squibb, E. H. Squibb and C. F. Squibb.

Authors—Rio de Janeiro, Brazil. Historia dos plantas medicinaes e uteis do Brazil. Por Theodoro Peckolt e Gustavo Peckolt. 6.° Fasciculo, pp. 923—1118. 1896.

Author—New Brunswick, N. J. Modern surgical dressings. By T. B. Kilmer. Reprint from Am. Journ. Pharm. Pamphlet, pp. 16. 1897.

Author — Mobile, Ala. Notes on some undescribed and little known plants of the Alabama flora. By Charles Mohr. Reprint from the Bull. of the Torrey Bot. Club. Pamphlet, pp. 11, with three plates.

U. S. Dep't. of Agricult.–Washington. Report of the Botanist for 1896. By Frederick V. Coville. Pamphlet, pp. 10. 1896.

Reviews.

The American Annual of Photography and Photographic Times Almanac for 1897. Edited by Walter E. Woodbury, F.R.P.S. pp. 370, with 300 illustrations. The Scovill & Adams Co., N. Y. Paper, $0.75, cloth, $1.25.

It is easy to believe that in this volume we have examples, in part at least, of the best American photographic work of the past year. Of the contributed articles several are of scientific interest; such as those on acetylene in microphotography, astronomical photography with photomicrographic apparatus, the efficiency of shutters, experiments with developers of the aromatic series, and on the research work of Dr. Joly in color photography.

Nor does the discovery of Roentgen lack ample notice. Mr. Alfred Stieglitz writes entertainingly of the hand camera and its importance, which he fully proves by stating that his best work (now so widely and favorably known) is mostly produced by this method and subsequent enlargement. Mr. J. W. Champney contributes a valuable article, well illustrated, on lighting in portraiture.

Mr. Walter Sprange in "Subjects for exposure" and Mr. J. Carpenter writing on Constable's country, certainly persuade every camera owner to make the most of his travels. To many readers, an interview with the late Napoleon Sarony chiefly concerning Bernhardt, will prove of interest.

Standard formulae, tables chemical and optical, receipts, etc., occupy about 75 pages, and seem capable of yielding any information that may be desired upon matters photographic.

It is, however, for its admirable array of illustrations that the volume most deserves praise. Despite the fact that the omission of certain ones would have been a distinct improvement, the average merit is surprisingly high. From Adoration by Chas. Berg to the excellent Devotion by Dexter Thurber, the reader finds evidence of artistic feeling intelligently directed and withal, clever technique.

There are many small bits, chiefly landscapes, that one is apt to hurry over, but upon a second examination they assert their merit and will be found fruitful in hints to workers.

For the general excellence of make-up, paper, engraving and typography, the editor and publishers deserve much praise. The volume will prove itself almost a necessity to those who use the camera, as it will delight all lovers of artistic photography.

We shall expect much of the American Annual hereafter. *W. H. Dudley.*

Proceedings of the American Pharmaceutical Association at the forty-fourth annual meeting held at Montreal, Canada, August, 1896, also the constitution, by-laws and roll of members. One vol., pp. XXVIII, 963. Baltimore: Published by the Am. Pharm. Assn., 1896.

Members of the Am. Pharm. Assn. will be glad to receive the annual volume of Proceedings at least midway between the two annual meetings. The reason why it has appeared somewhat earlier this year than last is possibly to be sought in the difference of several hundred pages between the two volumes. Attention was called last year to the task of publishing such a volume annually, also to the work involved in compiling the Report on the progress of pharmacy by a single person.

It is gratifying to note that considerable pruning was successfully accomplished in the editing of the discussions. These discussions as printed have not infrequently been full of errors, misleading and even false. Words spoken by one have been attributed to another. Consequently their historical value is exceedingly doubtful. The absence of discussions from the report of one of the sections will be missed by only a few. It shows clearly how well we might get along without them. The pharmaceutical journals represented at the meetings report them more or less in detail and this ought to suffice to satisfy the speakers. The association has no money to waste and to have economized in this direction speaks well for those who had the courage to remove a large part of this ballast. Let us hope that even more may be accomplished in this direction in the future.

That part of the volume which is new to most is the Report on the progress of pharmacy. It represents an enormous amount of work which is but little appreciated. This Report corresponds to the British Yearbook of Pharmacy and to the German Jahresbericht der Pharmacie. As long as these reports remain the work of but one or even several persons they can never be much more than a catalogue. If the compiler desires to do more he will preface his catalogue, as the Reporter has done for 1895/6, by a general retrospect. Having accomplished this he has done about all that can be expected of him.

If one stops to consider that yearbooks on chemistry mostly cover special fields of the science and even then are usually written not by one person, but by a number of specialists, one cannot help but think that the editing of a yearbook of so manysided a subject as pharmacy is not only an enormous task, but a bold undertaking.

Those who in the past have criticized the Report on the Progress of Pharmacy should criticize the compiler less, but the association more for asking a single person to undertake such an herculian task. As the writer has pointed out in reviewing the German Jahresbericht, the practicing pharmacist cares less for a compilation of facts, very few of which he can apply. What he wants is a general survey of the year's progress in pharmacy and the sciences closely related to pharmacy. This, however, can never be the work of one man.

The writer wants it definitely understood that he has not the slightest intention of criticizing the present Reporter. Even when the work was not as well done as at present the writer has always refrained from saying or writing anything derogatory about the Reporter, because he knows enough to respect a person who will do so much valuable work that so often has received more criticism than praise. It may, however, not be amiss to call attention to the fact that the system has been outlived and that a better one is in vogue in other departments of science. *E. K.*

Inorganic Chemical Preparations. By Frank Hall Thorp, Ph. D., Instructor in Industrial Chemistry in the Massachusetts Institute of Technology. One vol., pp. 236. Ginn & Company, Boston. 1896. $1.50.

The author says "This book owes its existence to the need which the writer has experienced, of more specific instructions than can conveniently be given orally to students beginning a course of laboratory practice in inorganic preparation work."

Part first contains directions for the necessary operations, such as Solution, Precipitation, Filtration, Decantation, Washing, Evaporation, Crystallization, Drying, Determining the density of solutions both by the hydrometer and the pyknometer, Calcination and Pulverizing. Ten general directions are also given which well deserve the careful attention of students. This introductory portion occupies thirty-eight pages.

Part second, the experimental part of the book, contains directions for making one hundred chemical preparations. In many cases more than one method of preparation is given, and the di-

rections seem full and complete. Besides the directions for manufacture, in nearly every case the author gives the molecular weight of the substance, the chemical reactions occurring in its production, its properties, and in many cases the uses to which it is put. An admirable feature of the book is the frequent references given to the sources drawn upon for the methods given. Nearly every page contains references to periodicals containing the information here given necessarily in an abbreviated form.

An appendix contains tables of the specific gravities and percentage composition of hydrochloric, nitric, sulphuric and acetic acids of various concentrations, and also of "liquor ammoniæ," also a table of approximate atomic weights and valence of the elements.

The book is a good one, and may be cordially recommended to all seeking instruction in the preparation of inorganic salts.

W. W. Daniells.

Lehrbuch der Allgemeinen Chemie, von Dr. Wilhelm Ostwald, Professor an der Universität zu Leipzig. In zwei Bänden. Zweiten Bandes zweiter Theil: Verwandtschaftslehre. Erste Lieferung: pp. 208. Zweite umgearbeitete Auflage. Verlag von Wilhelm Engelmann, Leipzig. 1896.

The written works of Prof. Ostwald notably his Treatise on general chemistry are too well known to demand either an introduction or a general comment. Attention has been duly called to the parts that have already appeared. The greater part of this fascicle is taken up by Book one: The history of the theory of affinity. Only a few pages are occupied by part of the first chapter of Book two: Chemical dynamics. The development of the theory of affinity from its earliest beginnings to the present day constitutes one of the most interesting chapters in chemical history. Possibly in no other book is it discussed in such thorough manner. The chapters in which the history of the theory of affinities is discussed can be enumerated as follows: History of chemical theories; Older history of the determination of affinities; Newer history of theory of affinity until 1886; The development of the theory of affinity in the last ten years. Chapter one discusses briefly the notions which the ancients held of affinity, the development of the hypothesis of the elements and atoms through the various chemical periods, the corpuscular hypothesis with its wild outgrowths of the imagination, the electrochemical hypothesis and the theories of Davy, Berzelius and others.

In the second chapter it is pointed out that Glauber and Boyle were the first who referred many chemical changes to a difference in chemical "forces". Stahl's affinity series and Geoffroy's table are there discussed. Bergmann's theory of affinity, adhesion and affinity, attempts at the formulation of laws governing affinity, mass-action, the theories of Wenzell, Berthollet etc. constitute subchapters of the detailed discussion that follows.

The third chapter begins with the quantitative theory of Guldberg and Waage. The fourth chapter, after a brief general introduction takes up van't Hoff's theory of solutions. Inasmuch as several English chemists and physicists have recently tried to discredit the theory of solutions and ions by casting ridicule upon it, it may not be amiss to quote the last paragraph of this chapter: "Durch die in den letzten Paragraphen geschilderten Fortschritte wurde die Theorie der freien Ionen mit der bis dahin bestehenden Lehre vom chemischen Gleichgewicht vollständig vereinigt, und sie hat hier ihre überall bewährte klärende und fördernde Wirkung im weitesten Masse bestätigt. In der Folge wird sich vielfach Gelegenheit ergeben, zu zeigen, wie nur durch diese Theorie ein volles Verständniss der Erscheinungen ermöglicht und die Beseitigung von Widersprüchen bewerkstelligt werden konnte. Ihre Bedeutung auf diesem Gebiete ist nicht geringer anzuschlagen, als in der Electrochemie, und hier wie dort sind neben den gelösten Aufgaben noch zahllose andere vorhanden, die der Lösung harren, nicht weil sie mit den gegenwärtigen Mitteln unlösbar wären, sondern weil die Fruchtbarkeit der neuen Anschauungen zu gross gewesen ist, als dass die wenigen Arbeiter auf dem Gebiete bisher im Stande gewesen wären, die reife Ernte unter Dach zu bringen". *E. K.*

Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technishen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 35. Jahrgang 1896. Erstes Halbjahr. Zweite Hälfte. pp. 117—283. R. Gärtner's Verlagsbuchhandlung (Hermann Heyfelder), Berlin. 1897.

The second fascicle contains abstracts of articles grouped under the following subject headings: foodstuffs and beverages; paper; photography and reproduction; byproducts, waste products, fertilizers, disinfection and technical hygiene and sanitation; soap; matches etc., explosives; preparation and purification of chemicals; chemical analysis; apparatus, machines, electro-technology, thermo-technology; appendix: secret remedies, adulteration of commercial articles etc.; new books. Pieces of apparatus are illustrated by cuts in the text. For persons interested in technical chemistry this quarterly is exceedingly valuable; for such, who do not enjoy liberal library facilities, when once used it will no doubt prove indispensable. *E. K.*

Historia das plantas medicinaes e uteis do Brazil. Por Theodoro Peckolt e Gustavo Peckolt. 6.° Fasciculo, pp. 923—1118. Companhia Typographica do Brazil, Rio de Janeiro. 1896.

Part six of the account of the medicinal and otherwise useful plants of Brazil by Theodor and Gustav Peckolt of Rio de Janeiro has appeared. This number contains the following families: *Chloranthaceæ*, *Piperaceæ*, *Polygonaceæ*, *Aristolochiaceæ*, *Loranthaceæ*, *Balanophoraceæ*, *Salsolaceæ* and *Amaranthaceæ*. We have here collected in pamphlet-form the results of researches of this veteran pioneer and his son. The botanical and common names of the various plants, the botanical descriptions, chemical constituents and uses, medical and otherwise, here find place. Fortunately these investigators more frequently address their readers in the German language than, as in the present instance, in Spanish. *R. H. True.*

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EDITORIAL.

A peculiar circumstance in the development of secret remedies in this country has led to their designation as "patent medicines" by the general public and even by professional men. This is exceedingly unfortunate. It has given rise on the one hand to a denunciation of medicinal substances that are rational in composition but protected by a legitimate patent. On the other hand it has caused the secret remedy to rise in favor even with people whose so-called ethics places them on a plane from which they look down upon the greedy and "unprofessional" patentee.

A general storm of indignation has been raised against foreigners who have availed themselves of our patent and trade-mark laws in preventing all competition, whereas the energies should be directed against our barbarous laws that sanction highway robbery. This irrational feeling is so general that many who have better convictions fear to express them or at least put them into practice. The result is that a person like Dr. Chas. Rice is maligned and has his motives questioned; that manufacturers and individuals instead of enriching science by valuable information in their possession keep it secret. True it is that in some instances, where public opinion is not feared, they would rather trust to secrecy than to government protection if their knowledge were published and patented.

It is of interest to note that some of those who most violently denounce the foreign patentees are sometimes most rhetorical in guarding the secret nostrum manufacturer. Physicians are also largely to blame. Their theoretical ethics does not prevent them from having their published works registered, but forbids the patenting of almost every thing else. As societies they denounce secrets in their sessions, but allow secret remedies to be advertised in their proceedings under the guise of scientific articles. As individuals they liberally use them in their practice.

In connection with this problem it may be of interest to mention the definition of a secret remedy given recently by the official medical board of Saxony: "Secret remedies are all those agents sold for the prevention and cure of disease of man and animals, of which the ingredients, percentage composition, and method of preparation are not made public when first announced and offered for sale. Such information must be complete and exact in readily comprehensible language and made known to all desirous of such information."

The Manufacturing Laboratory in the Household of Pharmacy.

During the past hundred years a most remarkable industrial revolution has taken place. It has not only affected industry in all its branches, but has had its influence upon society as a whole.

The change in general has been so complete that the present generation is largely ignorant of the "good old times" of the master-workman, of his assistants and apprentices. The large shop, with little or nothing about it to make it home-like, has almost entirely displaced the older combination of work-shop and home. Whereas the economic differences brought about have readjusted themselves to a considerable extent, the more social differences have been emphasized rather than readjusted as time went on. Still there remain numerous economic problems as well as the social problem to be solved.

Pharmacy, though conservative, has not been able to isolate itself from the general movement; it was, though reluctantly, swept away with it. Of the numerous callings that have undergone more or less radical changes since the French Revolution, pharmacy appears to have been least prepared for such change. At the close of the last and at the beginning of this century the pharmacies of Europe were almost as many cradles of the then infant sciences. Men whose names gave lustre to chemistry emenated from the apothecary shops, and Scheele, who lived and died as apothecary, is to-day regarded as one of the most remarkable men in the history of chemistry. The druggist of to-day is literally dead and buried among his bottles, like himself largely relics of the past. Such, from a scientific point of view, has been the fate of the average druggist. Commercially his fate has not been very different. The proverbial x-hundred percent have become a mockery. The difference between the average drug store and the department store against which, at present, so many rage is principally a difference of size and number of departments. Those pharmacists whose education and skill enabled them to rise above their surroundings, have in many instances as manufacturers left the retail pharmacy behind.

With the concentration of capital and business interests the watch-word of to-day has become specialization. Though the business interests of a large firm may be watched over and even directed by a central executive office, the detail work is conducted by specialists. The scientific work is accomplished almost entirely by men who give much of if not their entire time to investigation. Between the two the practicing pharmacist at present does not occupy a very enviable position. Financially as well as scientifically, and consequently socially, he has not kept pace with the rapid onward march of the past hundred years.

Laboratory of Schieffelin & Co.

Here lies the root of the present evil. The apparent rupture into factions has even given rise to the notion, that on account of differences which have arisen, the various branches which have grown out of a former unit no longer have anything in common. Practices, that have unfortunately prevailed to no small extent, have even placed those, who in not a very distant past were one, into hostile camps. The one at least apparently follows successfully the dictum that God helps those that help themselves, whereas the other having failed in assistance by the government begins to despair of self help.

The meaning of the word pharmacy has undergone numerous changes during past centuries, it is changing at present and no doubt will continue to change in the future. It to-day means one thing in the civilized countries of Europe and America and quite another thing in the semi-civilized countries of Asia. This, however, will no doubt prove true: that the future historian will include the pharmaceutical manufactories in the history of pharmacy of the nineteenth century, and moreover as having played a most remarkable part in the development of our calling. Whether they have been a benefit or an evil, or a not wholly unmitigated good is another question. This

It has been remarked that we in the United States were prone to lay more stress upon large and handsome college buildings than on a sound and thorough college curriculum and a good instructional force. To the late A. W. v. Hofmann, while on a visit to this country, are attributed the words: "A large building does not make a college of pharmacy." In his address, delivered in Goettingen in August 1890, the same veteran scientist, alluding to the unpretentious laboratory in which Woehler achieved results that revolutionized chemistry, remarked: "Es kommt nicht auf den Käfig an. Die Frage ist, ob der Vogel, der darinnen sitzt, singen kann."

Research Department.

the future historian may decide. There is no doubt that they have come and have come to stay for some time at least.

Considering the manufactories as part and parcel of pharmacy the Review has from time to time called attention to advancement made in this direction as well as e. g. in the direction of pharmaceutical education etc. The establishment and growth of one of the most unique pharmaceutical factories and the present resources and accomplishments of possibly the largest pharmaceutical manufacturing establishment the world has ever seen have been depicted in the earlier volumes of this journal. [**5**, 254; **10**, 12, 149, 275; **11**, 175.] Within little more than a year another factory has been firmly established and fully equipped that has attracted attention especially to its architectural and structural peculiarities and advantages.

It is no doubt true that much money has been wasted in elegant "cages" and that less stress has been laid upon securing "birds" that could "sing". Yet it may be said in partial justification at least that college buildings are not erected for a few years but for generations. It is proper, therefore, that due consideration should be given to appearance and future utility. That this opinion is held in Germany as well as in this country is sufficiently demonstrated by the magnificent buildings that are rapidly taking the place of the older modest scientific institutes.

Pharmaceutical journals have pointed to new and well equipped college buildings with considerable pride. Pharmaceutical education is such an important factor that the homes of our educational institutions merit all the attention that we can afford to bestow upon them without detriment to the cause for which the edifice is the outward

symbol. The interest should not center merely in the structure as an architectural accomplishment. The question is whether a given building with its modern improvements and equipments is best adapted to serve the cause of pharmaceutical education.

From the same standpoint we may be justified in viewing the homes of our large manufacturing establishments as well as the arrangement and equipment of our modern pharmacies.

It is a hope cherished by some that higher education will revolutionize pharmacy of to-day and lift her out of her present unenviable situation. The manufacturing industries, however, have revolutionized pharmacy of fifty years ago and are to no small extent coresponsible for the present state of affairs. The pharmaceutical profession as a whole is justified in asking what a particular branch is doing for the general good. Is the pharmaceutical manufacturer in the erection of his buildings, in the equipment of his laboratories and in the selection of his working force simply bent upon making so many thousands of dollars a paying investment, viewed from a merely commercial standpoint, or are his doings influenced to some extent at least by higher than purely mercenary motives.

The fact that scientific inertia or retrogression result in commercial stagnation and ruin has been fully appreciated in Germany. England and America have just begun to learn this lesson. German manufacturers have not only been liberal in assisting scientific research for its own sake, but some of the German factories employ more chemical investigators than can be found in the largest university. The scientific director of such a factory is assisted not only by a small army of able chemists, but by a corps of scientifically educated engineers as well. The result has been that the label "made in Germany" has successfully entered every port.

That the American chemist, engineer and architect, if they join their best efforts, can accomplish something of which they need not be ashamed when compared with the very best the old world has produced, has been demonstrated comparatively recently.

Analytical Department—West Side.

A chemical laboratory is proverbially an institution to be dreaded, and to be placed under ban by the community which it has invaded. The pleasant exterior of the new building erected by Messrs. Schieffelin & Co. on St. Ann's Ave. and 132nd St. in New York City does anything but justice to the traditional popular requirement of such an institution. The general style of the building is perfectly in harmony with its use, and at the same time pleasing and, no doubt, to most persons a surprise. If the exterior has proven unusual and interesting, the interior is even more so.

In the construction one of the principal objects has been not only to make the building as such fire-proof, but to make each section a fire-proof unit. In order to obtain at the same time a large floor-space unobstructed by as few columns as possible, a peculiar construction became necessary.

It consists of steel columns supporting a tri-

angular frame work of steel beams, which are braced by brackets, thus allowing a very wide span between the columns, on the cantelever system. The spaces between the steel beams are filled in solidly with a concrete of Portland cement. Therefore, as there are no openings between the floors, and as the partitions are made of rock plaster on metal, if any fire occured, it would be confined to the room in which it started.

The floors are all graded to different flush outlets, and the sills of the doors are raised three inches above the floors, so that no water can overflow from one floor to another and thus do damage which might not be occasioned by fire. in the floor for belting or for vertical shafts. This power is supplied by a large dynamo which also lights the entire building.

In the rooms where naphtha, ether, or other inflammable solvents are employed, the electric lights have sleeves of rubber and are on one circuit, controlled by a switch in another part of the building, in order to avoid any chance of a spark.

The floors of the different departments are of different materials, to correspond with the varying character of the work done. Where the work is dry, the floor remains of concrete, smooth and clean. Where water is apt to be spilt, as in the

Analytical Department—East Side.

The window frames are of iron, and in the places where the fire shutters would be required by law they have been replaced by wired glass window panes, which may soften and crack during the course of a fire, but which never will break out, fall in, or warp, and, therefore, are most effectful in confining the flames to the room where the fire may be. The doors in the building are fire-doors and are hung with counterpoised weights, connected by a fusible connection, which melts when the temperature is raised, and allows the door to slide shut. There are three fire-escapes to the building; one at the end of each wing, and one at the back. The two front fire-escapes are of stone, and are enclosed in brick towers. The elevator, dumb-waiter and chutes for refuse are all on the outside of the building.

All the power that is needed on the upper floor is transmitted by electricity, thus avoiding holes chemical department, the bottle washing room, and the pharmaceutical department, the floors are made of asphalt. In the acid and nitrous ether room the floor is of blue-flag stone laid in oil tar, graded to an earthenware drain pipe; and where much oil is used the floor is galvanized iron.

There are a number of drying rooms both hot (steam heated) and cold. They are supplied with flues, and the air is exhausted by means of a large Root Blower. The mill drying room is situated immediately over the boilers, where a high temperature can be maintained.

The work in the laboratory is divided into departments, namely, the Analytical Department, Mill Department, Chemical Department, Extract Department, Pharmaceutical Department, and the Wrapping and Shipping Department.

The analytical department is in charge of two chemists, and besides analyzing and testing almost

everything that is received or sent out, they are occupied with research and experimental work. This department occupies one end of the large building on the second floor, covering a space of 50 x 30 feet, divided by a solid oak partition, with plate glass top. One side is used for the laboratory work proper, for which there is ample apparatus and many improved fittings, such as centrifugal machines, suction and blast pump, steam water baths, drying closets, hood, etc. The sink and drain-board is made of cherry treated while in the drying kiln with two applications of melted paraffine. The electric lights in this whole department are on movable arm brackets, enabling the light to be put in any position desired.

In the adjoining room is an excellent library of works on chemistry, a file of current chemical literature, including some eight German and fifteen English periodicals, improved balances, and high power microscope; all on a working table which is covered with plate glass. The floor of this department was given two coats of paint to avoid any possibility of dust from the concrete. There is also a dark room for photographic and polariscopic work.

The other departments are fitted with appliances appropriate for their work. The most interesting perhaps are the large percolators in the chemical department, and the mammoth mixer with a capacity of one thousand pounds, and also the copper stills in the extract department.

The above description calls attention primarily to those things which are peculiar to this laboratory rather than to those which most laboratories have in common. It seems almost unnecessary to state that most if not all of these improvements have been tried elsewhere. It is the bringing together of all that have proven successful into one organic whole, as it were, that makes the Schieffelin Laboratory so interesting and instructive.

To enumerate the chemicals and pharmaceutical preparations made in this laboratory would result in a list resembling very much a copy of a chemical or pharmaceutical catalogue and would be of little value. It may be of interest, however, to call attention to the progress made in recent years not only in the assay of cocaine, but also

Extract Department:—Process by cold repercolation.

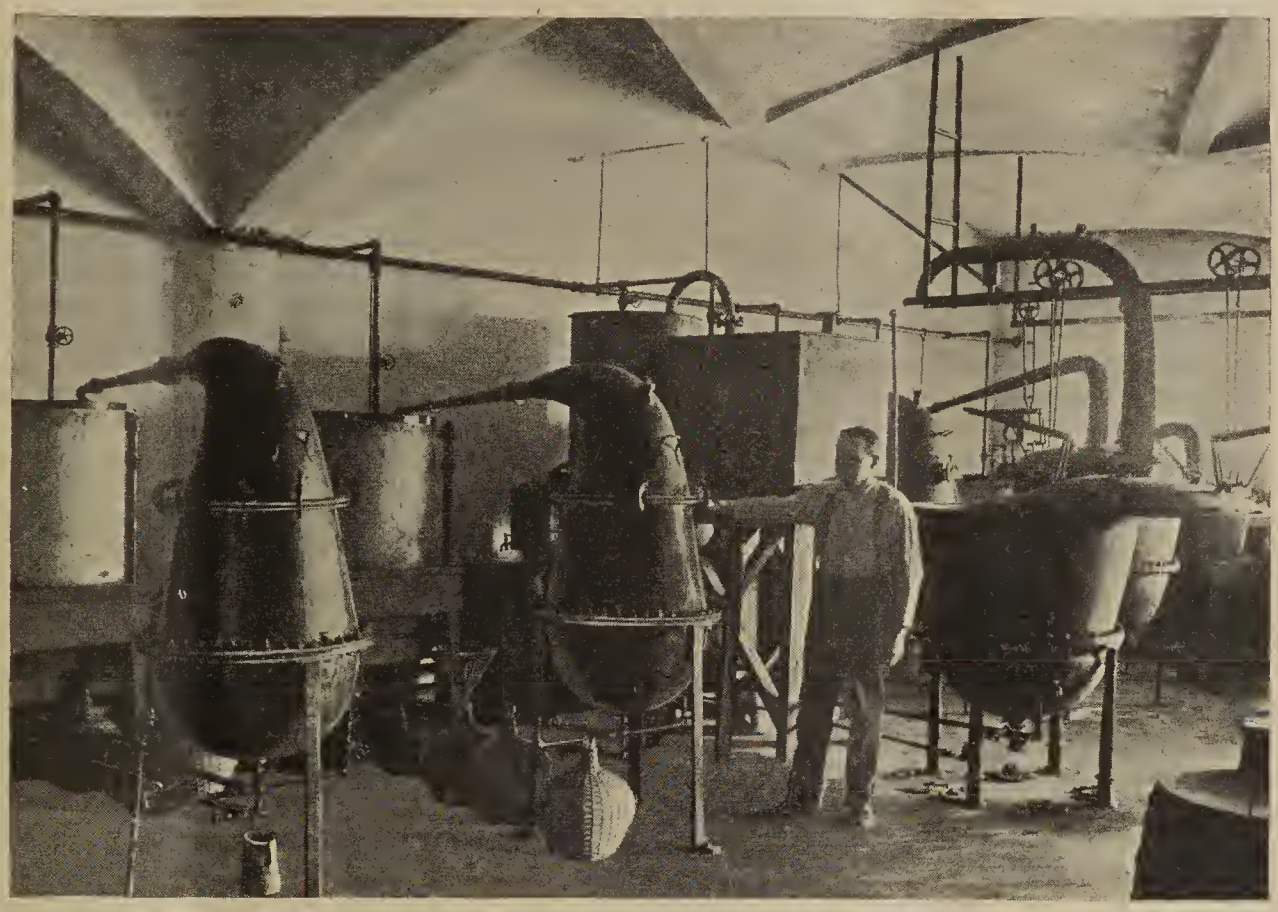
in its manufacture. Dr. Schieffelin remembers well when in his student days a measurable crystal of cocaine was a scientific curiosity. To-day beautiful crystals of considerable size are an every day occurrence in this laboratory. What is of more importance than size and beauty is that they are equally pure.

Among the galenical preparations it was of special interest to note with what painstaking care e. g. the medicated soaps, dehydrated and benzoated lard etc. are being prepared. The necessity of covering deficiencies by color does not exist where science seems to have taught perfection.

The writer has attempted in as few words as possible to give some, though an inadequate idea of this new laboratory and of the work that is being accomplished in it. Dr. William J. Schieffelin, who has kindly taken the writer through the laboratory and explained it in all

its details, has at the request of the Society for Chemical Industry read a paper on Fire proof laboratory construction before the New York Section, giving a detailed account of the architectural and structural details of the building. This account appears in the journal of the society.

A general description of the laboratory has also recently been published in the anniversary number of the Pharm. Era.



Extract Department:—Copper Stills.

The Pharmaceutical Review has always laid more stress on the general aspect of pharmaceutical problems and institutions than on minor details. Whereas a repetition of descriptions already published seem uncalled for it may not be amiss to give a less detailed description in which emphasis is laid on the position of the manufacturing laboratory in the household of pharmacy. Although the large laboratories have seemingly been detrimental to the pharmacist, like the large factories to the home industries, this detriment will last only until readjustment has taken place. In both instances we record a progress that has not only proven a benefit to mankind in general, but has and will more fully prove beneficial to those directly concerned. There is no reason why we should not welcome every important advance in pharmaceutical manufacturing as well as in engineering, transportation, etc. Progress may work a temporary hardship to some, at least for a time. The inevitable necessity is readjustment along the lines of progress. This may not always be an easy matter, but it will in itself be an advance more important than its forerunner which has necessitated it.

E. K.

Centrifugal and Medicated Soap Machinery.

ORIGINAL CONTRIBUTIONS.

The Relative Strength of Antiseptics.

By Dr. *Louis Kahlenberg.*

Many of the important antiseptics are aqueous solutions of salts or acid or basic substances. During the last decade our knowledge of the nature of solutions and especially of those of the class just mentioned has been greatly increased. New facts concerning these solutions have been discovered and a theory has been formed explaining these facts as well as many others that have long been known and yet have hitherto not been satisfactorily explained from theoretical standpoints of view. In 1887 van't Hoff[1] using the experimental results on osmosis obtained by Pfeffer[2] ten years earlier laid the foundation of the new theory of solutions by pointing out an almost complete analogy between the behavior of gases and solutions. He showed that, considering the temperature constant, the osmotic pressure of a solution is the same as the pressure exerted by the gas if the same amount of substance that is dissolved in the solvent is thought of as being volatilized and as occupying the same volume as that possessed by the solution. Thus van't Hoff demonstrated how the laws of Boyle and Gay Lussac also apply to solutions. His work enabled him to extend the hypothesis of Avogadro to solutions: Equal volumes of all solutions having the same temperature and the same osmotic pressure contain an equal number of molecules, which number is identical with that contained in a gas having the same volume, temperature and pressure.

The relations existing between the osmotic pressure of a solution and the diminution of the vapor tension (or the elevation of the boiling point) or the lowering of the freezing point of the same were fully explained by van't Hoff from a theoretical standpoint of view. He thus furnished a firm scientific basis for Raoult's empirical methods of determining molecular weights of dissolved substances from the diminution of the vapor tension or the lowering of the freezing point of their solutions.

The theory of van't Hoff explained very well the behavior of many solutions, still there remained a large class of solutions—particularly those of acids, bases and salts—that were found to exert a greater osmotic pressure than they ought to according to the theory. The difficulty that the theory met here is similar to the one that Avogadro's hypothesis had to contend with in accounting for the high vapor pressure or the low vapor density of such substances as ammonium chloride, which difficulties disappeared, however, when it was found that these substances are dissociated in their vapor state.

The solutions possessing a greater osmotic pressure than the theory required also showed too great a diminution of the vapor tension and too great a lowering of the freezing point. These solutions then acted as though they contained more molecules than was expected from the chemical formulæ of the dissolved salts. The explanation of their peculiar behavior was finally pointed out by Arrhenius to be that the dissolved substances are dissociated into part molecules. The explanation was then similar to that found for the abnormal vapor density of ammonium chloride.

Arrhenius[3] had been investigating the electrical conductivity of solutions and soon pointed out a close relation that exists between this property and the lowering of the freezing point. From his results he concluded that the solutions which in their behavior apparently deviate from the theory of van't Hoff in the sense mentioned are conductors of electricity, and that the substances they contain are dissociated into part molecules, the ions. These part molecules or ions are the atoms or radicals that are interchanged in the ordinary chemical reactions that aqueous solutions of acids, bases and salts undergo.

The theory of electrolytic dissociation, as the theory of Arrhenius is called, at first met with much opposition, but is now generally accepted. From the standpoint of this theory, a solution of hydrochloric acid, for example, contains H-ions and Cl-ions besides a certain amount of undissociated HCl. The dissociation is practically complete when 1 gram molecule (i. e. the molecular weight in grams) of the acid is dissolved in 1000 litres of water. In very dilute solutions then we have practically only H-ions and Cl-ions. These are charged with electricity, the former with positive, the latter with negative electricity. From experimentation on electrolysis it has been determined that each gram equivalent of ion bears 96540 coulombs. There are always as many positive ions as negative ions present in a solution, so that its electrical neutrality is preserved. Hydrogen ions and chlorine ions are not the same as hydrogen and chlorine gases. They differ from these in the energy they contain; the former contain less energy than the latter—supply the energy as we do in electrolysis and the ions are changed to hydrogen and chlorine gas respectively.

Dissociation increases with increase of dilution. It is complete only at infinite dilution. However, in the case of strong acids and bases and their salts dissociation increases so rapidly with the dilution that when a gram equivalent is contained in 1000 litres of water, dissociation is practically complete. If BA be the general formula of a salt, B being the basic radical and A the acid radical, then an aqueous solution will contain B-ions and A-ions together with a certain number of undissociated molecules BA. All the physical and chemical properties of solutions of electrolytes have been found to be due to the properties of the ions plus those of the undissociated molecules the solution contains.

It having always been taken as axiomatic that the physiological action of any substance is due to its chemical character, Kahlenberg and True[4] have made the statement, that "if in the case of the solutions in question, all the chemical and physical properties are due to the properties of the ions plus those of the undissociated molecules they contain, it seems very probable that the physiological effect produced by such solutions is also due to these." This thought was first presented to the Wisconsin Academy of Science, Arts and Letters at its meeting in December, 1895. It was

[1] Zeitschr. f. physik. Chem. 1, 481.
[2] Osmotische Untersuchungen, Leipzig, 1877.
[3] Zeitschr. f. physik. Chem. I, 631, 1887.
[4] See Botanical Gazette, August, 1896.

again presented at the meeting of the American Medical Association in May, 1896, and was published in the Botanical Gazette in August, 1896.

At the meeting of the Wisconsin Academy, Kahlenberg and True, using the data contained in Miquel's table of the efficiency of antiseptics, as given in Sternberg's Manual of Bacteriology, showed that their statement held good for the toxic action of solutions on bacteria. It is true that this could only be shown in rough outline from these data as the strength of the solutions was given in per cent. In order that the results be directly comparable, the strength of the solutions must be given so as to allow chemically equivalent quantities rather than equal quantities by weight to be compared.

Kahlenberg and True determined the strength of various solutions in which the roots of the bean *Lupinus albus* L. will just live. Mr. F. D. Heald,[5] Fellow in Botany at the University of Wisconsin at the time these first experiments were in progress, was induced to further test the theory by determining the strengths of the solutions in which roots of other plants will just grow. He worked with the pea (*Pisum sativum*) and corn (*Zea Mais*). The results that were obtained fully confirm the general statement of Kahlenberg and True as quoted above. These results may be found in the proceedings of the Amer. Med. Ass'n and in more complete form in the Botanical Gazette.

In the December number of the Zeitschr. f. physik. Chem., Theodor Paul and Bernhard Krönig published an interesting article entitled "Ueber das Verhalten der Bakterien zu chemischen Reagentien". They tested the effect of aqueous solutions of various kinds on bacteria. The work was done mostly with spores of anthrax. Their methods of experimentation and their detailed results must be consulted in the original article. Their general conclusions are as follows:

"1. The salts of the noble metals, platinum excepted, those of gold, silver and mercury have a specific toxic power.

"2. The disinfecting power of metallic salts does not depend alone on the concentration of the metal contained in the solution, but is also influenced by the specific properties of the salts and the solvent. The view of Behring, that 'the disinfecting power of mercury compounds depends in the main only upon the amount of mercury in solution, be the compound what it may' (Behring, Zeitschr. f. Hygiene 9, 450), can not be held.

"3. Solutions of metallic salts in which the metal exists as a part of a complex ion and in consequence of which the concentration of the ions of the metal is low, are but weak disinfectants.

"4. The action of a metallic salt does not depend alone upon the action of the ions of the metal, but also upon that of the anions and the undissociated part.

"5. The halogen compounds of mercury, including the sulphocyanides and cyanides, disinfect according to their degree of dissociation.

"6. The disinfecting power of a solution of mercuric chloride is weakened by the addition of metallic chlorides.

"7. In concentrations of 1 liter or above the strong acids act not only according to the concentration of their hydrogen ions, but also according to the specific properties of their anions. The more dilute solutions of the strong acids and those of the organic acids appear to act according to their degree of dissociation.

"8. The bases KOH, NaOH, LiOH, which are approximately dissociated to the same degree, have nearly the same disinfecting power; NH_4OH, which is much less dissociated, is a very weak disinfectant.

"9. The oxidizing agents HNO_3, $H_2Cr_2O_7$, $HClO_3$, $HMnO_4$ act according to the place they occupy in the series of oxidizing agents which has been formed on the basis of their electrical behavior. Chlorine does not fit into this series; it exerts a very strong specific action.

"10. The disinfecting power of the halogens Cl, Br, I, in accord with their usual chemical behavior, decreases with increase of atomic weight.

"11. We have been able to confirm the statement of Scheurlen that the disinfecting power of phenol solutions is increased by the addition of salts. A cause for this phenomenon could not be found from experiments thus far performed.

"12. In the case of the solutions tested, we have been able to confirm the well known fact that substances dissolved in alcohol and ether have almost no effect upon the spores of anthrax.

"13. An aqueous solution of alcohol of a certain strength increases the disinfecting power of $HgCl_2$ and $AgNO_3$."

Scheurlen and Spiro in the Münch. medic. Wochenschr., 1897, No. 4 publish an article upon the same subject. I have seen only an abstract of this article in the Pharmaceutische Centralhalle of Feb. 18, 1897. This abstract states that according to the investigations of the authors mentioned it is very probable that the efficiency of dissolved disinfectants depends upon certain ions into which the substance dissociates when dissolved. A case is mentioned where mercury as a part of a complex ion has less antiseptic action than have mercury ions. It is further stated that the addition of sodium chloride to a solution of mercuric chloride weakens the disinfecting power of the same and that the reverse is true in the case of phenols and alcohols. No reason is apparently assigned for the latter fact. It is clear that the results of these investigators are in accord with those of Paul and Krönig.

This work on antiseptics places our knowledge of this subject upon a firmer scientific basis, and certainly enables further research on disinfectants to be carried on to a better advantage.

As far as the work of Paul and Krönig or Scheurlen and Spiro is connected with the theory of electrolytic dissociation, it is simply a confirmation of the views advanced by Kahlenberg and True. The former investigators seem to have overlooked this fact entirely, for in their publications they make no mention of the earlier work of Kahlenberg and True.

The details of the researches of the last named authors must be consulted in the original article. To show that they took a broad view of the subject, covering not only the action of antiseptics but applying the new theory of solutions to their physiological action in general, the last paragraphs of their article in the Botanical Gazette are here given in conclusion.

"That the modern theory of solutions would throw light on their physiological action was to be expected. From the foregoing detailed results it is evident that in the case of plants the toxic

[5] See Botanical Gazette, August, 1896.

action of solutions of electrolytes, when dissociation is practically complete, is due to the ions present. When dissociation is not complete, the undissociated parts of the electrolytes may also exert a toxic effect, as has been pointed out in several instances. We have here then, as it were, a recognition of the theory of electrolytic dissociation by the organic world.

"It is clear that a knowledge of the mere presence of a metal or other element in a solution does not allow one to draw a conclusion as to its physiological action; it must also be known as to whether that element exists as an ion by itself or is combined with other elements to form a complex ion. If the addition of certain substances to a solution containing a physiologically active ion forms a complex ion of much less powerful action, it follows that these additional ingredients afford a means of reducing, so to speak, the physiological action of the simple ion.

"Although this work has thus far been carried out only with higher plants, investigations on bacteria that are being carried on in this connection at the Bacteriological Laboratory of the University of Wisconsin have already yielded results supporting the theory. Anyone inspecting Miquel's table of the efficiency of antiseptics in Sternberg's Manual of Bacteriology, and at the same time bearing in mind the theory of Arrhenius, although the concentrations are given in percent instead of chemical equivalents, will be able to see in it, only in rough outline to be sure, the corroboration of the views here advanced. Experiments on animals are contemplated.

"It will be seen that a wide field for research along physiological lines opens up by applying to the field of biology the dissociation theory that has proved so fertile in chemistry and physics. Further work in this direction, using the latest and best that the new physical chemistry has to offer, it is to be hoped will place our knowledge of the physiological action of solutions of electrolytes on a better basis than the purely empirical one on which it has thus far rested. It does not seem too much to expect that the effects of such study will soon be felt in agriculture and therapeutics, while bacteriological study pursued from the standpoint of the new theory will yield important additions to our knowledge of antiseptics."

University of Wisconsin, Madison.

Medicinal Plants of Brazil.*

By *Dr. Theodor Peckolt of Rio de Janeiro.*

Mespilodaphne indecora Meissn. Kommt auf den Gebirgen der Staaten S. Paulo, Minas und Rio de Janeiro vor und ist unter der Volksbenennung *Canella sassafraz da serra* — Gebirgssassafras — bekannt. Es ist ein kleiner Baum mit hellbräunlichem Holze, welches nur zu Möbeln benutzt wird. Die Varietät **M. i.** var. **Canella** Meissn., im Staate Rio de Janeiro vorkommend, wird ebenfalls *Canella sassafraz* und *Paó sassafraz* benannt.

Ein grösserer Baum mit gelbbräunlichem Holz, welches zu Bauten, vorzugsweisse als Bretter benutzt wird. Sp. Gew. = 0.866. Die Rinde und das Holz haben nur schwaches Aroma. Beide werden vom Volke zu gleichen Heilzwecken benutzt wie *M. sassafras.*

Mespilodaphne pretiosa Meissn. Dieser in den Staaten Maranhôa, Pará und Amazonas vorkommende Baum ist unter den folgenden Volksnamen bekannt: *Casca preciosa* — Kostbare Rinde; *Paó preciosa* — Kostbarer Baum; und *Casca de Maranho* — Maranhonrinde; unter den Tupistämmen als *Pereiorá* und *Amapaima.* Varietäten dieses Baumes finden sich in den Staaten S. Paulo, Minas und Rio de Janeiro, welche nicht die kolossale Grösse erreichen und welche *Canellinha* — kleiner Zimmt — benannt werden.

Es ist ein prachtvoller, bis 20 Meter hoher Baum, mit abwechelnden, lederartigen, länglich-lancettlichen, etwas zugespitzten Blättern. Die Blüthentraube hat kleine, weisse, wohlriechende Blüthen. Die Beere ist länglich, bis zur Mitte von der Achse umschlossen.

Wie schon der Name besagt, ist die Rinde beim Volke und den Indianern sehr geschätzt, kommt jetzt jedoch selten in den Handel. Der Handels-

Mespilodaphne indecora Meissn. Occurs in the mountains of the states S. Paulo, Minas and Rio de Janeiro and is popularly known as *Canella sassafraz de serra* — mountain sassafras. It is a small tree with light brownish wood which is used only for furniture. The var. **Canella** Meissn. found in the state Rio de Janeiro is likewise called *Canella sassafraz* and *Paó sassafraz.*

Larger trees with yellowish-brown wood used in buildings especially as boards. Sp. grav. 0.866. The bark as well as the wood have only a faint aroma. Both are used by the people for the same medicinal purposes as *M. sassafras.*

Mespilodaphne pretiosa Meissn. This tree occurs in the states Maranhôa, Pará and Amazonas and is known by the following popular names: *Casca preciosa,* precious bark; *Paó Preciosa,* precious tree; *Casca de Maranho,* Maranho bark; among the *Tupi* tribes it is called *Pereiorá* and *Amapaima.* Varieties of this tree are found in the states S. Paulo, Minas and Rio de Janeiro which do not attain a very great size and are called *Canellinha,* small cinnamon.

It is a very fine tree reaching a height of 20 meters, with alternate, leathery, oblong-lanceolate somewhat acuminate leaves. The floral raceme has small, white, fragrant flowers. The berry is oblong, enclosed to the middle by the axis.

As the name itself indicates, the bark is highly prized by the people and also by the Indians but is seldom seen in the market. The commercial

* Continued from p. 46. Translated for the Review by Dr. R. H. True, Asst. Prof. of Pharmacognosy at the University of Wisconsin.

artikel bildet 16 bis 20 Ctm. lange und 3 bis 6 Ctm. breite, flache, 2 bis 4 Millm. dicke Stücke, mit gelblichbrauner, ziemlich glatter Epidermis, unregelmässig mit kleinen, flacherhabenen Wärzchen, besetzt. Die innere Seite ist braun, die Bastanlage grob und stark, im Bruche sehr dickfaserig. Die Rinde besitzt einen eigenthümlichen aromatischen Geruch, ähnlich einer Mischung, von Sassafras, Zimmt und Nelken. Der Geschmack ist süsslich brennend-aromatisch, etwas zimmtartig.

Die Rinde ist ein geschätztes Excitans. Die Infusion von 16 Grm. zu 160 Grm. Colatur wird Esslöffelweisse bei Nervenschwäche in Folge geschlechtlicher Ausschweifungen angewandt. Ebenso bei Leucorrhea, Oedem der unteren Extremitäten, chronischem Katarrh, Wassersucht, Gicht und Syphilis; bei einigen Affectionen wird das Absud der Rinde zu gleicher Zeit Bädern hinzugefügt.

Dr. Castro in Pará hat damit therapeutische Versuche angestellt und folgendes beobachtet: Dass anfänglich kleine Dosen verabreicht werden müssen, denn zu starke Dosen verursachen ein eigenthümlich drückendes Kopfweh und Congestionsanfälle. Bei kleinen oft wiederholten Dosen reagirt der Körper fortwährend durch gelinde Transpiration und Diurese. Besonders günstigen Erfolg hatte bei Dysenterie und Diarrhoe eine Infusion von 15 Grm. zu 300 Grm. Colatur, stündlich bis zweistündlich einen Esslöffelvoll verabreicht.

Die Indianer benutzen zu diesem Zwecke die gepulverten Beeren mit Wasser genommen.

Die Blätter haben einen schwachen zimmtähnlichen Geruch und werden von den Waldbewohnern statt indischem Thee zum täglichem Gebrauche benutzt.

Die Rinde liefert einen groben, sehr dauerhaften Faserstoff. Das sehr feste, dauerhafte, hellbräunliche Holz dient zu Bauten.

Oreodaphne rigida Meissn. Dieser in den Staaten Minas, S. Paulo und Paraná vorkommende Baum heisst volksthümlich *Canella bataiha*.

Er erreicht eine Höhe von 20 bis 25 Meter und oftmals einen Durchmesser von 2 Metern. Die Rinde ist braun und rissig. Die Blätter sind steif, lederartig, elliptisch oder länglich-lancettlich, an beiden Enden kurz zugespitzt. Die mit wohlriechenden Blüthen besetzte, traubig-geästete Rispe ist endständig und achselständig. Das poröse, schmutzigweisse, leichte Holz ist nicht sehr fest, doch ungemein elastisch und verursacht beim Fällen einen eigenthümlichen Widerstand, die Schneide der Axt stumpfend. Die Holzfäller bezeichnen deshalb den Angriff auf einen solchen Baum eine Schlacht (*batalha*), daher auch die Benennung.

Das Holz wird vorzugsweise zum Sägen von Plafondbrettern benutzt. Sp. Gew. = 0.758. Die Blätter besitzten keinen Geruch während das Holz schwach sassafrasähnlich riecht. 10 Kilo lufttrockener Sägespäne lieferten bei der Destillation nur 0.993 Grm. eines mattgelblichen, dünnflüssigen, ätherischen Oeles von angenehmem Geruch, ähnlich dem einer Mischung von Lorbeer und Sassafras.

Die lufttrockenen Sägespäne lieferten folgende Bestandtheile: Wasser 19.705; ätherisches Oel 0.009; Weichharz 0.029; Harzsäure 0.022; Fett 0.015; Bitterstoff 0.056; Extract 4.739; Asche 3.0 Procent. Das hellgelbe Weichharz war von Terpenthinconsistenz. Der Geruch desselben ähnelt dem des Oeles. Es ist in Aether, Chloroform und absolutem Alcohol löslich.

Die Harzsäure ist geruch- und geschmacklos, braun, fest, verbrennt mit Flamme und schwach-

article is in the form of flat pieces 16 to 20 cm. long, 3 to 6 cm. wide and to 4 mm. thick. It has a yellowish-brown, rather smooth epidermis marked irregularly with small, flat, elevated projections. The inner side is brown, the bast region coarse and strong, fracture coarsely fibrous. The bark has a peculiar aromatic odor similar to a mixture of sassafras, cinnamon and cloves. The taste is sweetish, burning-aromatic, somewhat like cinnamon.

The bark is a valued stimulant. The infusion of 16 grm. in 160 grm. colature is given in doses of a tablespoonful for nervous weakness resulting from sexual excesses. It is used likewise in leucorrhoea, œdema of the lower extremities, chronic catarrh, dropsy, gout and syphilis. In some affections the decoction of the bark is at the same time added to baths.

Dr. Castro in Pará has made therapeutic experiments with this and obtained the following results: At the beginning, small doses must be given since too strong doses cause a peculiar, oppressive headache and congestive attacks. In small, frequently repeated doses, the body reacts by gentle perspiration and diuresis. Especially favorable results in dysentery and diarrhoea follow the administration every hour or two of a tablespoonful of an infusion consisting of 15 grm. in 300 grm. of colature.

The Indians use for this purpose the powdered berries taken with water.

The leaves have a faint, cinnamon-like odor, and are in common use among the forest inhabitants as a substitute for Indian tea.

The bark yields a coarse, very durable fibre. The very hard, durable, light brownish wood is used in buildings.

Oreodaphne rigida Meissn. This tree occurs in the states Minas, S. Paulo and Paraná and is popularly called *Canella batalha*.

It attains a height of from 20 to 25 meters and frequently a diameter of 2 meters. The bark is brown and fissured. The leaves are stiff, leathery, elliptic or oblong-lanceolate, at both ends acuminate. The branching racemose panicle of fragrant flowers is terminal and axillary. The light, porose, dirty-white wood is not very firm but is unusually elastic and offers a peculiar resistance to the chopper by dulling the ax. Wood choppers, therefore, refer to the falling of such a tree as a battle (*batalha*), hence the name.

The wood is used mainly when sawed into boards for ceilings. Sp. grav. 0.758. The leaves have no odor whereas the wood has a faint sassafras odor. 10 kilos of air-dried sawdust yielded on distillation but 0.993 grm. of a faintly yellow, thinly fluid ethereal oil similar to a mixture of laurel and sassafras.

The air-dried sawdust gave the following constituents: Water 19.705, ethereal oil 0.009, soft resin 0.029, resin acid 0.022, fat 0.015, bitter principle 0.056, extractive 4.739, ash 3.0 percent. The light yellow, soft resin was of the consistence of turpentine. The odor resembles that of the oil. It is soluble in ether, chloroform and absolute alcohol.

The resin acid is tasteless and odorless, brown, firm, burns with a flame and faint aromatic odor,

aromatischem Geruch, Asche hinterlassend. Es ist in Chloroform, Alcohol und Ammoniak löslich. Mit Natrium carbonat gekocht, löst es sich vollständig unter Entwickelung eines eigenthümlichen aromatischen, etwas terpenthinölartigen Geruches.

Das braune Fett hat Gänseschmalzconsistenz, ist geruchlos und von schwach ranzig, beissendem Geschmack. In kaltem, absolutem Alcohol ist es unlöslich, löslich in siedendem, und scheidet sich beim Erkalten heller, aber nicht krystallinisch wieder aus.

Der Bitterstoff, welcher aus der wässerigen Lösung des alcoholischen Extractes durch Fällung mit Tannin erhalten wird, ist amorph, gelblich, geruchlos und von stark bitterem Geschmack. Er ist löslich in Aetherweingeist, Alcohol und Wasser. Die Lösung reagirt neutral und giebt mit Bleisalzen keine Reaction, mit Goldchlorid, Sublimat, und Tannin aber Präcipitate.

Oreodaphne guyanensis Meissn. Dieser Baum kommt nur in den an Guyana grenzenden Theilen des Staates vor. Er hat dieselbe Volksbenennung *Cujumary* wie *Aydendron Cujumary* und soll auf gleiche Weise benutzt werden.

Oreodaphne odorata Meissn. Diese Art befindet sich in den tropischen Staaten bis Bahia und ist unter den folgenden Benennungen bekannt: *Canella mirim* — kleiner Zimmt; *Canella limão* — Limonenzimmt; und *Lauro* — Lorbeer.

Es ist ein schmächtiger Baum mit glatter Rinde und länglich-lancettlichen, stumpf zugespitzten Blättern. Die Rispen sind achselständig und tragen gelbe, wohlriechende Blüthen.

Die Rinde hat aromatischen Geruch, ähnlich dem einer Mischung von Sassafras und Citronenöl, und einen bitter gewürzhaften Geschmack. Das Decoct dient als Volksmittel bei Brustkrampf, 30 Grm. zu 500 Grm. Colatur, stündlich ein Kelchglasvoll genommen.

Das hellgelbe, seidenglänzende, etwas gemaserte Holz hat den Geruch der Rinde, nur schwächer, und dient zu inneren Bauten, besonders zu Möbeln. Sp. Gew. nach Saldauha = 0.710, nach Dr. Del Vechio 0.985.

leaving an ash. It is soluble in chloroform, alcohol and ammonia. Boiled with sodium carbonate, it dissolves completely, developing a peculiar, aromatic odor resembling somewhat turpentine oil.

The brown fat has the consistence of goose fat, is odorless and of faintly rancid, biting taste. In cold, absolute alcohol, it is insoluble, in boiling absolute alcohol it dissolves but separates out on cooling, clearer but not crystalline.

The bitter principle obtained from the aqueous solution of the alcoholic extract by precipitation with tannin, is amorphous, yellowish, odorless and has a strongly bitter taste. It is soluble in ether-alcohol, alcohol and water. The solution reacts neutral and with lead salts, gives no reaction; with gold chloride, sublimate and tannin, however, it yields precipitates.

Oreodaphne guyanensis Meissn. This tree occurs only in those parts of the state which border on Guyana. It has the same popular name, *Cujumary* as *Aydendron Cujumary*, and is used in a like manner.

Oreodaphne odorata Meissn. This species occurs in the tropical states as far as Bahia and is known under the following names: *Canella mirim* — small cinnamon; *Canella limão* — lemon cinnamon; and *Lauro* — laurel.

It is a slender tree with smooth bark and oblong-lanceolate, blunt pointed leaves. The panicles are axillary and bear fragrant yellow flowers.

The bark has an aromatic odor, similar to that of a mixture of sassafras and lemon oil and a bitter, spicy taste. The decoction is used as a folk remedy in asthma, 30 grm. to 500 grm. colature administered a wineglassful once an hour.

The light yellow, somewhat mottled wood has a silky lustre. It has the odor of the bark to a less degree and is used for interior work in buildings and especially for furniture. Sp. grav. according to Saldauha, 0.710; according to Dr. Del Vechio, 0.985.

TRANSLATIONS.

Reagents and Reactions known by the Names of their Authors.*

Based on the original collection by *A. Schneider*, revised and enlarged by Dr. *Julius Altschul.*

Vitali's reaction for alkaloids. The alkaloid after addition of fuming nitric acid is evaporated to dryness on the water-bath, and the residue treated with a drop of alcoholic potash. Various alkaloids show characteristic color reactions: e. g., atropine shows a violet color; strychnine with a small amount of potash, a reddish-yellow, with a larger amount, a reddish-violet color.

Vitali's reaction for blood. The suspected stain is extracted with caustic potash solution, the solution acidulated with acetic acid, and tincture of guaiac added. If no blue color appears within ½—2 hours, the addition of oil of turpentine or of oil of eucalyptus will immediately bring out that color if blood was present.

Vitali's reaction for biliary pigments. See *Gmelin's* reaction.

Vitali's reaction for chloroform. A current of hydrogen (produced from pure zinc and dilute sulphuric acid) is passed through water and is ignited at the exit-tube, which should be tipped with platinum. The flame is colorless and no color is produced by the introduction of a copper wire. If now the suspected liquid is poured into the above water, in case chloroform (or any other volatile chlorine compound) is present, the flame will turn green upon introducing the copper wire.

Vitali's test for naphthol-yellow (butter color) in the urine etc.

1. The ethereal extract of the suspected liquid is evaporated to dryness; in the presence of naphthol-yellow, the residue is colored red upon treatment with potassium cyanide solution. If the ethereal solution is shaken with caustic potash

* Continued from p. 52.

solution and the latter then acidulated, woolen fibres which have been treated with alum as a mordant will be tinged yellow when dipped into the acid solution, even in the presence of only 0.000001 g. naphthol-yellow.

2. A solution of naphthol-yellow (even in urine) produces a green lake with cobaltous chloride and caustic potash.

3. The same solution when treated with stannous chloride and subsequently with ammonia, yields a white precipitate, which turns rose-red upon the addition of more ammonia.

Vogl's test for glucose. See *Mulder's* test.

Vogl's reaction for quinine. Upon treating with chlorine water and potassium ferricyanide, quinine gives a red coloration.

Vogl's reaction for chenopodium seeds in flour. Flour containing chenopodium seeds is colored rose to red upon digesting for a few hours with alcoholic hydrochloric acid.

Vry's quinine test. See *De Vry's* quinine test.

Vulpius' reaction for acetanilid. A few centigrammes of acetanilid are boiled in a test-tube with 1 cc. caustic potash solution, after which a drop of filtered chlorinated lime solution is suspended on a glass rod over the hot mixture. The drop is soon colored yellow (with a violet tinge by reflected light); upon further heating it turns violet.

Vulpius' sulphonal reaction. Upon heating sulphonal with potassium cyanide, the odor of mercaptan is developed. The fused mass yields a red color when treated with ferric chloride (sulphocyanate reaction).

Wagner's alkaloid reagent is a solution of iodine in potassium iodide (deci-normal iodine solution); it yields brown precipitates with aqueous solutions of alkaloidal salts.

Wagner-Fresenius' solution is an iodine-potassium iodide solution.

Wayne's solution for identifying glucose consists of 2 g. copper sulphate, 10 g. caustic potash, and 10 g. glycerin dissolved in 200 g. water. Glucose reduces this solution upon warming, cuprous oxide separating out.

Weber's test for blood. The suspected liquid (urine) is treated with glacial acetic acid, shaken out with ether, the ethereal layer separated and treated with old resinified oil of turpentine and a few drops of freshly prepared 10 p. c. tincture of guaiac. In the presence of blood, a blue coloration results. Compare *Almén's* reagent.

Weidel's reaction for xanthine. Upon evaporating with chlorine water and a trace of nitric acid, xanthine leaves a yellow residue which is colored a deep yellowish-red by the action of ammonia vapors.

Weigert's solutions for staining bacteria are prepared by dissolving 2—4 g. methylene blue (2 g. fuchsin or 2 g. victoria blue, respectively) in 15 ccs. alcohol, and diluting the solutions with 85 ccs. water.

Weissmann's acid mixture for dissolving iron samples consists of 10 volumes concentrated nitric acid, 2 volumes concentrated sulphuric acid and 10 volumes water.

Ulzer and *Brüll* also recommend the addition of a little concentrated hydrochloric acid while concentrating.

Welmann's reaction for vegetable fats.

Reagent: 5 g. sodium phosphomolybdate are dissolved in water, treated with concentrated nitric acid and diluted to 100 ccs.

Test: 1 cc. fat is dissolved in 5 ccs. chloroform and shaken for a minute with 2 ccs. of the reagent. In the presence of vegetable fats (cacao-butter excepted), a green color results which changes to blue upon addition of ammonia.

Wender's test for glucose. See *Neumann-Wender's* test.

Wenzel's reaction for alkaloids. These yield various colorations with a solution of 1 g. potassium permanganate in 200 g. sulphuric acid. Veratrine, e. g., yields first a light red, then an orange coloration.

Weppen's veratrine reaction. If a small quantity of veratrine is mixed with about six volumes of cane sugar and then a few drops of concentrated sulphuric acid be added, a yellow color results, changing to green and finally to blue. —*Neumann-Wender* employ instead of the sulphuric acid and cane sugar, a solution of furfurol in sulphuric acid. Morphine and codeine yield with either reagent unstable red colorations.

Wesełsky's reagent is nitric acid saturated at a low temperature with nitrous acid.

Weselsky's reaction for phloroglucin. Upon adding toluidine nitrate and potassium nitrite to a phloroglucine solution, a light yellow color is first produced which gradually becomes opalescent, then orange, and finally cinnabar-red. In great dilutions the precipitate remains suspended for a long time; upon settling, the solution appears orange-red, the precipitate cinnabar-red. By means of this reaction, phloroglucine can be identified in solutions of 1:200,000.

Weyl's test for creatinin. Upon treating urine with a dilute solution of sodium nitroferricyanide and subsequently with caustic soda, it will assume, if creatinin is present, a beautiful red coloration which soon changes to yellow. The presence of other sulphur compounds interferes with the test.

Salkowsky adds acetic acid after the red color has appeared, and warms: the solution turns blue and Prussian blue separates out.

Jaffé also recommended the same test.

Wickersheimer's liquid, a preservative solution, consists of 100 g. alum, 25 g. common salt, 12 g. saltpetre, 60 g. potassium carbonate, and 20 g. arsenous acid, dissolved in 3 litres of water.

Wiederholt's reaction for pure rum and cognac. Upon treating 10 ccs. of the sample with 3 ccs. concentrated sulphuric acid (sp. gr. 1.84) and allowing the mixture to cool, the aroma of pure rum is retained, while in the case of the artificial product the aroma is destroyed.

Upon treating pure cognac with a few drops of dilute ferric chloride solution, a black precipitate is formed. Artificial cognac does not give this test; at the most, a dirt-colored precipitate slowly forms.

Wiesner's reagent for lignin is an acid solution of aniline sulphate; woody fibres are stained golden yellow by means of it, while pure cellulose is not affected. A 0.5 p. c. phloroglucine solution, which together with hydrochloric acid colors woody fibres yellow, is also known as *Wiesner's* reagent.

Wilson's reaction for nitrous acid in sulphuric acid. Add a granule of resorcin to the sulphuric acid and shake with 5 ccs. water. In the presence of nitrous acid a yellow coloration results.

Winckler's reagent. See *Mayer's reagent.*

Wolesky's test for wood fibre (in paper). 1 g. diphenylamin is dissolved in 50 ccs. alcohol and 5—6 ccs. concentrated sulphuric (or hydrochloric) acid. Depending upon the amount of wood fibre present in the paper, different intensities of orange-red will appear upon moistening with the reagent; the colorations become more prominent upon drying.

Wolff's reagent for naphthols. *α*- and *β*-naphthol dissolved in alcoholic potash yield upon heating with chloroform to 50° C., clear blue solutions, which change to red upon acidulating with hydrochloric acid. This reaction was first mentioned by *Lustgarten*.

Worm-Mueller's solution for identifying glucose is a modification of the old *Fehling's* solution. It consists of two separate solutions, viz., a 2.5 p. c. copper sulphate solution and a 4 p. c. caustic soda solution containing 10 p. c. of rochelle salt. 5 ccs. of the suspected urine on the one hand and 1—3 ccs. copper sulphate solution with 2.5 ccs. of the rochelle salt solution on the other are separately heated to boiling and then mixed without shaking.

Fehling's solution (q. v.) according to recent formulæ is also prepared and kept on hand as two separate solutions.

Wright's reaction for aconitine. If 0.001 g. aconitine is distributed through a few drops of moderately concentrated sugar solution, and then a drop of concentrated sulphuric acid is added, a rose-red zone will develop at the line of contact of the sugar solution and the acid, which color rapidly changes to a dirty violet and brown.

Wurster's modification of *Silbermann's* albumen reaction (q. v.). In place of concentrated hydrochloric acid, a mixture of this with $\frac{1}{10}$—$\frac{1}{5}$ its volume of concentrated sulphuric acid is employed.

Wurster's "tetra"-paper for identifying ozone or hydrogen peroxide is filter-paper saturated with tetramethylparaphenylenediamine. Traces of ozone or hydrogen peroxide in neutral solutions or in solutions acidulated with acetic acid, cause an intense blue coloration of the paper. Upon boiling with alcohol the blue color disappears. Instead of the tetramethyl- the dimethyl-compound may also be employed.

Young's test for gallic in tannic acid consists in the addition of potassium cyanide, which gives a red coloration with the former, but not with the latter. According to *Stahl* this reaction can be referred entirely to the alkalinity of the potassium cyanide.

Yvon's reagent for determining the amount of alcohol in chloroform. 1 part potassium permanganate and 10 parts caustic potash are dissolved in 250 parts of water. This reagent was originally intended for testing for impurities in chloroform, on the supposition that upon shaking impure chloroform with the reagent, the violet color of the latter would be changed to green, but it was found that the prescribed alcohol content of chloroform would produce this change and the solution can therefore be employed in testing for this. Alcohol-free but impure chloroform stands the test.

Yvon's reaction for colchicine. See *Paul's* reaction.

Zacharias' reagent for albumens is acidulated potassium ferrocyanide solution and ferric chloride.

Zeisel's reaction for colchicine. Upon boiling a solution of 0.002 g. colchicine in 5 ccs. water for one to three minutes with the addition of 5—10 drops fuming hydrochloric acid and 4—6 drops ferric chloride solution (10 p. c.), the solution, originally yellow, turns olive-green and finally blackish-green. Upon shaking with chloroform in the presence of air, the chloroform assumes a ruby-red color, the aqueous solution remaining olive-green.

Ziel's solution. See *Neelsen's* solution.

Zuelzer's reaction for albumen is a zone reaction, occurring upon pouring a layer of albuminous urine upon concentrated chromic acid solution.

Zuelzer's reaction for grape sugar. A solution of cupric oxide in soda lye is reduced by grape sugar in the cold or upon gentle warming.

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* Arranged by Mr. R. Fischer.

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Fusel oil: Jorissen.

Gallic acid: Young.

Glucose: Agostini. Almén. Arndt. Barfoed. Barreswil. Böttger. Braun. Brücke. Campani. Capezzuoli. Conradi. Dudley. Einhorn. Fehling. Fiebig. Fischer. Focke. Frommherz. Hager. Haine. Heinrich. Heller. Hoppe-Seyler. Horsley. Jack. Johnson. Knapp. Krüger. Lehmann. Leismer. Löwe. Löwenthal. Maumené. Mohr. Moore. Mulder. Neumann-Wender. Nylander. Oliver. Ost. Otto. Pavy. Pellet. Pelouze. Penzoldt. Purdy. Rubner. Sacchse. Sacchse-Heinrich. Schmidt. Seegen. Soldaini. Tollens. Trommer. Violette. Vogel. Wayne. Wender. Worm-Müller. Zülzer.

Glucosides: Brunner.

Glycerin: Böttger. Hager. Linde. Reichl. Ritzert.

Grape sugar, see Glucose.

Gums and Resins: Hehn. Hirschsohn. Klunge. Plugge. Storch.

Hardening solutions: Erlicki. Müller. Perenyi. Remak.

Hippuric acid: Lücke.

Homatropine: Arnold.

Horse meat: Bräutigam.

Hydrocarbons: Fritsche.

Hydrochloric acid: Contejean. Günzburg. Mohr. Schuchardt. Uffelmann. Villiers.

Hydrocyanic acid: Fröhde. Hlasiwetz. Ittner. Lassaignae. Liebig. Payer. Schönbein-Pagenstecher.

Hydrogen peroxide: Bach. Böttger. Denigès. Kassner. Schönbein. Traub. Wurster.

Hyoscyamine: Gerrard.

Hypochlorous acid: Kolter.

Indican: Hammersten. Obermeier.

Indol: Bayer.

Inosite: Gallois. Scherer. Seidel.

Iodine: Castle. Jolles. Sandlund.

Iodoform: Greshoff. Lustgarten.

Iron: Weissmann.

Ketones: Fischer.

Leucine: Scherer.

Lignin: Hegler. Höhnel. Wiesner.

Lubricants: Holde. Schweitzer.

Maceration liquid: Schultze.

Magnesia: Schaffgot.

Mercury: Gaglio. Jolles. Merget.

Mineral acids: Huber. Mohr. Nickel. Rheoch.

Mineral oils: Lux.

Mineral powder: Klein. Thoulet.

Moisture: see water.

Morphine: Grandeau. Husemann. Jorissen. Kieffer. Lamal. Loof. Otto. Pellagri. Robinet. Tattersal. Weppen.

Mounting media: see preservative solutions.

Myrrh: Bonastre.

Naphthalene: Penzoldt.

Naphthol: Aymonier. Flückiger. Lustgarten. Richardson. Wolff.

Naphthol-yellow: Schäffer. Vitali.

Narceine: Arnold.

Nataloin: Histed.

Nicotine: Arnold. Roussin.

Nitric acid: Braun. Desbassin. Horsley. Lindo. Reichardt. Richmont. Schmidt.

Nitrogen: Donath. Knop.

Nitroso compounds: Liebermann.

Nitrous acid: Denigès. Fresenius. Griess. Griess-Ilosvay. Lindo. Lunge. Meldola. Schäffer. Wilson.

Oils, ethereal: Dragendorff. Hager. Hehn. Perrot. Puscher. Tuchen.

Oils, fatty (the letters following the names of the authors refer to: C, Cottonseed oil; Cac., Cacao oil; O, Olive oil; P, Peanut oil; R, Castor oil; S, Sesame oil):

Allen. Barbot O. Basoletto S. Baudouin S. Bechi C. Behrens S. Baudard. Boudet O. Brullé C, O. Cailletet. Carlinfanti S. Crace-Calvert. David. Deiss C. DiVetere R. Finkener R. Filsinger Cac. Flückiger-Behrens S. Gassend S. Geitel. Glaessner. Hager Cac. Hauchecorne C. Hehner. Heydenreich C. Holde. Hübl. Jacobsen. Köttsdorfer. Labiche C. Lewin S. Livache. Lux. Maumené. Merz O.

Meyer. Millian S, C. Poutet. Reichert-Meissl. Renard P. Roth, Royère. Schneider O. Schönvogel. Souchère P. Storch. Tocher S. Valenta. Vetere R., Villavecchia S. Welmann.

Organic nitrogen compounds: Lassaigne.

Ozone: Böttger. Houzeau. Wurster. Schönbein.

Paper: Dahlmann. Wolesky.

Peptone; Posner. Salkowsky.

Petrolatum: Crouzel.

Phenacetine: Hirschsohn. Reuter. Ritsert. Schroeder.

Phenols: Allen. Cotton. Davy. Eykmann. Fresenius. Hoffmann. Hoppe-Seyler. Jacquemin. Landolt. Lex. Liebermann. Millon. Kintschgen-Gintl. Plugge. Pollaci. Salkowsky. Tommasi.

Phloroglucin: Weselsky.

Phosphorous acid: Pagel.

Phosphorus: Hager. Mitscherlich. Scherer.

Picrotoxin: Becker. Otto.

Pilocarpine: Lenz.

Preservative solutions and mounting media: Beale. Farrant. Godbay. Pacini. Ripart. Topping. Wickersheimer.

Ptomaines: Trotarelli. Brouardel.

Pus: Day. Donné.

Pyridine: Anderson.

Quinidine: Brand.

Quinine: Brand. Creuse. DeVry. Flückiger. Hesse. Herapath. Kerner. Liebig. Prollius. Schäfer. Vogel.

Quinoline: Anderson.

Resorcin: Bodde.

Rum: Karle. Wiederholt.

Saccharin: Börnstein. Kayser. Lindo. Schmitt.

Salicin: Creuse.

Salicylic acid: Millon. Schulz, Spicea.

Sodium carbonates: Biltz.

Solanine: Clarus.

Sparteine: Marque.

Staining solutions: Ehrlich. Frey. Gabbet. Gram. Hanstein. Koch. Löffler. Maugin. Neelsen. Weigert. Ziel.

Strychnine: Fraude. Lyon. Vitali.

Sulphonal: Ritsert. Schwarz. Vulpius.

Sulphur: Hager.

Tannic acid, Tannin: Carpené. Gardiner. Gautier. Young.

Test-Paper: Boas. Geissler. Griess. Houzeau. Musculus. Oliver. Schönbein. Schönbein-Pagenstecher. Schott. Stahl. Wurster.

Textile fibres: Persoz. Schlossberger. Schweizer.

Thallin: Skraup.

Thiophen: Meyer.

Thiotolene: Laubenheimer.

Tyrosin: Hoffmann. Piria.

Urea: Hüfner. Musculus. Schiff.

Uric acid: Dietrich. Fokker. Schiff.

Urine (test for pathologically altered constituents): Ehrlich. Baumann.

Vaseline: see petrolatum.

Veratrine: Luchini. Schumpelitz. Trapp. Weppen.

Water: Dupasquier. Hager. Mann. Merget. Stahl.

Wine dye-stuffs: Arata. Böttger. Cazeneuve. Faure. Girard. Nessler. Pradine.

Xanthine: Weidel.

Zinc: Rinnmann.

ERRATA.

Vol. 14, p. 183, C. 2, l. 3: read **biliary** for **gallic.**
" 14, p. 202, C. 1, l. 35: read Brouardel's for Bronardel's.
" 14, p. 202, C. 2, l. 27: read Capezzuoli's for Capezznoli's.
" 14, p. 202, C. 2, l. 32: read Capranika's for Caprauika's.
" 14, p. 203, C. 2, l. 9: read Crouzel's for Cronzel's.
" 14, p. 204, C. 1, l. 38 et seq.: read **pus** for **mucus.**
" 14, p. 204, C. 2, l. 10: read Desbassin's for Derbassin's.
" 14, p. 204, C. 2, last line and on following page: read **pus** for **mucus.**
" 14, p. 228, C. 1, l. 8 from below, and C. 2, l. 1: read Esbach's for Erbach's.
" 14, p. 254, C. 1, l. 28: read Hanstein's for Hannstein's.
" 15, p. 12, C. 2, l. 30: read Oliver's for Olivier's.
" 15, p. 31, C. 1, l. 61 and 67: read Schäffer's for Schäfer's.
" 15, p. 31, C. 2, l. 34: read **leucine** for **brucine.**
" 15, p. 31, C. 2, l. 35: read **leucine** for **bencine.**

MONTHLY REVIEW.

Chemistry.

Methaethyl.

A Berlin apothecary, Dr. G. F. Henning has introduced a new local anaesthetic under the above name, which is said to possess "certain" advantages over ethyl chloride. The information circulated in the German journals is exceedingly scant and unsatisfactory. "Methaethyl" would seem to be a contraction of methylethyl, a synonym for propane. The boiling point of this hydrocarbon, however, lies at —17° not at 0°, which is the boiling point of normal butane and also that of the new local anaesthetic.

[Pharm. Centrh., 38, p. 130.]

Preparation of Phosphorus by Electricity.

In an electric furnace similar to that in which calcium carbide is prepared Jondrain heats tricalcium orthophosphate with carbon. The reaction which takes place is supposed to be expressed by the following equation: $(PO_4)_2Ca_3+14C=P_2+3CaC_2+8CO$. The vapors of phosphorus pass off with the escaping carbon-monoxide and are condensed. The output according to this process is stated to be 80 p. c. of the theoretical yield. In addition calcium carbide is obtained for which there is considerable demand at present.

[Pharm. Ztg., 1897, p. 157; from Journ. de Pharm. et de Chim., 1897, 3.]

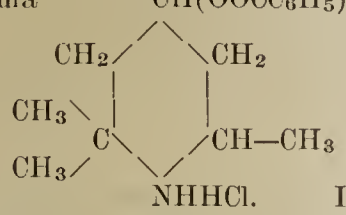
On the Occurrence of Mercury in Crude Hydrochloric Acid.

L. van Itallie again calls attention to the fact that crude hydrochloric acid, especially that coming from the Rhine Province may contain mercury. Upon testing such an acid with Bettendorf's reagent he obtained a gray precipitate, which, after the absence of arsenic had been proven by other means. was shown to be mercury. The presence of mercury in the acid is explained by the presence of this element in the iron pyrites used in the manufacture of sulphuric acid. In the process of roasting it is carried into the lead chambers. The crude chamber acid is used in the decomposition of sodium chloride and thus it is carried into the hydrochloric acid. This at least is van Itallie's explanation.

[Pharm. Ztg., 1897, p. 157; from Pharm. Weekbl. 33, No. 39.]

Encaïne B.

According to P. Silex, eucaïne B is the hydrochloride of benzoylvinyldiacetonealkamine, the structure of which is stated to be represented by the following formula



NHHCl. It stands in close relation to the older eucaïne or eucaïne A and also to cocaïne and tropa cocaïne, but differs from the latter by being much less toxic. The hydrochloride in distinction to the corresponding salt of cocaïne, can be boiled indefinitely without decomposition. It can, therefore, be sterilized. At ordinary temperature a 5 p. c. aqueous solution can be prepared. This solution is neutral or but slightly alkaline. Unlike cocaïne A it is stated to irritate occular membranes but very little if at all. It is also stated to be a good anæsthetic and less poisonous than the older eucaïne.

[Pharm. Ztg. 42, p. 114; from D. Med. Wochenschr. 1897, 6.]

Cosaprine, a new Antipyretic.

The sparing solubility of antifebrine in cold water as well as its toxic properties (particularly cyanosis), and the sporadic use of sulphanilic acid in therapy has led P. Schwarz to prepare the acetyl derivative of the sodium salt of sulphanilic acid, which is characterized by its ready solubility in water.

Nietzki and Benckiser (Ber. 17, p. 708) tried to prepare this compound, but did not obtain it pure. The structural relation between antifebrine, sodium sulphanilate and cosaprine is readily shown by means of the following structural formulas:

Antifebrine — $C_6H_5.NH(CO.CH_3)$;

Sodium Sulphanilate — $C_6H_4\begin{matrix}NH_2 & (1)\\ SO_3Na & (4);\end{matrix}$

Cosaprine — $C_6H_4\begin{matrix}NH(CO.CH_3) & (1)\\ SO_3Na & (4).\end{matrix}$

Cosaprine constitutes a white crystalline mass readily soluble in water, sparingly in alcohol, almost insoluble in ether. Only after prolonged boiling with acids and subsequent cooling sulphanilic acid separates, acetic acid also being liberated. In the presence of alcohol the latter can be recognized as acetic ether.

[Pharm. Ztg. 42, p. 131.]

Estimation of Caffeine in Coffee and Tea.

The following method is suggested by A. Hilger and A. Juckenack. 20 g. of finely comminuted coffee or tea are soaked in 900 g. water in a beaker for several hours at the temperature of the room, and then thoroughly exhausted by boiling, replacing the water as it evaporates. For green coffee 3 hours are requisite, for roasted coffee and tea 1½ hours are sufficient for complete extraction. The mixture is then allowed to cool to 60—80°, 75 g. of *Liquor Aluminii acetici* are added and while stirring 1.9 g. sodium bicarbonate. The mixture is boiled for another five minutes, and after cooling the total weight is brought up to 1020 g. The mixture is then filtered. Of the absolutely clear filtrate, corresponding to 15 g. substance, 750 g. are taken. 10 g. of aluminium hydroxide and a magma of filter paper and water are added. The mixture is evaporated on a water-bath to dryness with occasional stirring. The residue is completely dried in a water-bath drying oven and exhausted with tetrachlorcarbon in a Soxhlet extraction apparatus for eight hours. The tetrachlorcarbon remains perfectly colorless and the pure white crystallized caffeine can be dried and weighed. The figures thus obtained can as a rule be used directly for the calculation of the percentage of caffeine. If absolutely correct results are desired the nitrogen can be determined, according to the Kjeldahl method. The tetrachlorcarbon used as a solvent should first be purified by shaking it 3—4 times with 5% soda solution and then three times with water. Finally it is dried with calcium chloride and fractionated.

[Apth. Ztg., 12, p. 145; from Forschungsber., 1897, p. 49.]

Botany and Pharmacognosy.

Electro-Germination.

Recent experiments made by A. S. Kinney on the effect of electrical stimulation on the germination and growth of seedlings, tend to show that development is hastened by such treatment. The application of an optimum current strength for short periods of time gave at the end of 24 hours 30 percent more germinated seeds than a similar untreated culture. At the end of 48 hours, 20 percent more germinations were found than in the control; at the end of 72 hours but 6 percent of difference was found. The range of current strength producing an acceleration is, however, very limited, being about 3 volts when an interrupted induced current is used. The optimum strength is practically the same for small seeds, clover, mustard, etc., and is the same for radicals and hypocotyls. It appears that an acceleration is obtained only during an early stage of development. Interrupted, indirect currents are more effective than direct currents.

[Bulletin No. 43, Hatch Experiment Station, Amherst, Mass., Jan. 1897.]

Calcium Salts, Use and Solubility.

Prof. Egidio Polacci finds calcium salts a regular constituent not only in plant ash but also in bones, in blood corpuscles, yolk of egg and in other bodies; in the latter sometimes constituting three-quarters of the total ash. The French province Lemousin was poor until the construction of modern roads permitted the cheap transportation thither of calcium salts. On many Italian soils the calcium added was more beneficial than the phosphoric acid. The author found that calcium carbonate dissolves not only in CO_2-containing water but also in water free from it provided the phosphate is already there in solution. One part of calcium carbonate demands 9662 parts of water at 12° and 9604 parts of boiling water to bring it into solution. Water saturated with CO_2 dissolves 0.709 grm. of the carbonate at 0°, 0.880 grm. at 10° and by increasing pressure as much as 3.0 grm. per liter. By boiling and introducing hydrogen, water completely freed of CO_2 dissolves at 12.5°, 9.79 mg. of calcium phosphate, rain water simply boiled at the same temperature 12.03

mg., ordinary rain water 21.63 mg., when saturated with CO_2, 60.52 mg.

[Pharm. Centralh., 38, p. 134; from Bollettino chimico farmaceutico, 1896, p. 388.]

Antitoxines.

The chapter: Summary of the therapeutics of the year 1895—96, written for the yearbook of treatment by Nestor Tirard, is introduced by the following paragraph:

"The main interest of the year has centered in the various forms of treatment with antitoxins; and evidence continues to accumulate, indicating that for diphtheria at least we possess in antitoxic serum 'a remedy of distinctly greater value than any other with which we are acquainted' (Report of the Medical Superintendents of the Metropolitan Asylums Board). The use of antitoxin for tetanus, of antivenene for snake bites, of antistreptococcus serum, and of many others, continues to attract attention, though, for the present, many are disposed to wait for further evidence of their value. The patient investigation of the claims of the serum treatment has not, however, prevented the accomplishment of a great deal of sound work, which has included in its scope a consideration of older remedies, as well as of those of more recent introduction. Experience has shown that toxic symptoms may arise from the incautious use of many drugs, and a few words of warning as to the means of minimizing risks may fitly find a place in these pages. Considerations of the victorious march of progress, even in therapeutics, should not render us unmindful of possible dangers in the ground already traversed. Sundry suggestions have been made for facilitating the employment of older remedies which have recently, perhaps, been somewhat neglected owing to the introduction of more palatable preparations. The new remedies which claim attention are not so numerous as usual, and with the exception, perhaps, of eucaine, it cannot be said that they present any striking characteristics. Many are synthetic preparations; some are recommended as antiseptics, others as soothing local applications, while others are astringent, both locally and after absorption."

[Yearbook of Treatment for 1897, p. 445.]

Rio and Cartagena Ipecac.

Dr. Albert Schneider has completed a very thorough study of the comparative anatomy of the Rio and Cartagena ipecac roots and finds differences in the starch grains sufficient to distinguish them. These characteristics are as follows:

Rio ipecac. Starch grains compound with centric hilum. Consist of two, three or four parts, each part or granule being developed from a distinct amyloplastid. The single granule shows a centric hilum of two, three or more crevices, radiating outwardly. Stratification is present, but not readily noticeable. The longest diameter of the largest single granule and of a part of the largest compound granule ranges from 6.5 to 13.5 μ. The smallest granules are 1.5 μ or less in diameter. The largest compound granules range from 17 μ to 19 μ in the longest diameter.

Cartagena ipecac. Maximum size of the single granules and the largest parts of the maximum compound granules range from 17 μ to 23 μ, a size never obtained in Rio ipecac. The large, somewhat discoid single granules are very characteristic. Single starch granules are more numerous than in the Rio root; masses of adherent grains are comparatively rare; the striation is the same; the hilum is more evident, particularly in the larger single granules; the parenchyma-cells are usually less completely filled with starch.

Dr. Schneider says ten examinations at least are necessary before concluding whether adulterations are present or not. Also a considerable quantity of material must be studied.

The vicissitudes of a changing nomenclature lead Dr. Schneider to regard the botanical name of the Rio ipecac as *Uragoga Ipecacuanha* Baill. and the Cartagena sort is assigned to *Uragoga granatensis* Baill.

[Chemist and Druggist, 50, p. 272; from Journal of Pharmacology.]

The Abnormal Formation of Resin Ducts.

Resin ducts occur normally in the wood of spruces, pines, and larches, and are normally wanting in the wood of balsams, hemlocks, and cypresses. Wood parenchyma (simple resin receptacles, Göpp), according to Kraus is present in the wood of all species of Abies. Hartig found a marked irregularity in the number and distribution of resin ducts in certain conifers that had been attacked by *Agaricus melleus*. He also found that in spruces in which so-called double rings are formed on account of late frosts, there is a striking irregularity in the formation of resin ducts in such rings. In 1892 J. Hartmann made some comparative anatomical investigations on the shoots from a "witch broom" on *Abies pectinata* and the normal shoots of the same species, in which he found that in the abnormal formation of cortex there is great irregularity in the structure and in the size, as well as a considerable increase in the number of resin receptacles. E. Mer found an abnormal formation of resin ducts in shoots of Abies sp.? as a result of the attacks of *Phoma abietina*.

We must assume that abnormal resin receptacles are present only when the plant is in part or entirely pathologically influenced. If for example resin reservoirs be found in the wood of *Abies pectinata*, they are a sure indication of some pathological condition existing in the plant. Further, with our present knowledge we must assume that resin is strictly an excretion, being of no further use in the metabolism of the plant.

These pathological conditions and the abnormal formation of resin ducts as well as other anatomical changes in the wood of diseased conifers have been studied by Alexander P. Anderson.

Three classes of pathogenic material were used in these investigations: (1) frosted conifers; (2) "witch brooms" on different species of Abies produced by the growth of *Æcidium elatinum*; and (3) tissues of conifers that had been infected with *Agaricus melleus*, *Phoma abietina*, or *Pestalozzia Hartigii*. In the first case tissues from *Pinus sylvestris*, *Picea excelsa*, and *Chamæcyparis Lawsoniana* were used.

To even briefly outline the results of the investigations along these three lines would lead too far. The reader interested in the changes produced will have to consult the original, or may be referred to the Botanical Gazette for which the abstractor has written a more detailed review of the reprint.

[Forst.-naturw. Zeitsch., 1896.]

Literary.

Books and Pamphlets Received.

Felix Alcan — Paris. Dictionnaire de Physiologie par Charles Richet, Professeur de Physioloie à la Faculté de Médecine de Paris. Tome II. 2e Fascicule: Bulle—Cerveau, pp. 321—640. 1897. Fr. 8.50.

Field Columbian Museum — Chicago. Contribution II to the coastal and plain flora of Yucatan. By Charles F. Millspaugh, M. D., Curator, Department of Botany. Botanical Series. Vol. 1, No. 3. pp. 278—341. 1896.

Lea Brothers & Co.—Philadelphia. The yearbook of treatment for 1897. A critical review for practitioners of medicine and surgery. One vol., pp. VIII, 480.

Deutsche Verlags-Anstalt—Stuttgart. Lexikon der gesammten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen. Mit zahlreichen Abbildungen.
XVI. Abtheilung: Essigsäure—Feldpolizei, pp. 1—160;
XVII. " Feldreservoir—Fleischwarenfabrikation, pp. 161—320;
XVIII. " Fleischwolf—Gasmaschinen, pp. 321—480;
XIX. " Gasmesser—Gewehr, pp. 481—640;
XX. " Gewehrfabrikation — Grundtemperatur, pp. 641—800.
1896 und 1897. Lieferung @ M. 5.00.

Chr. Herm. Tauchnitz — Leipzig. Anatomischer Atlas der Pharmacognosie und Nahrungsmittelkunde. Von Dr. A. Tschirch und Dr. O. Oesterle. Lieferung 11. Tafeln 51 bis 55 incl. 1896. M. 1.50.

Verlag von Fr. Eugen Koehler—Gera-Untermhaus. Koehler's Neueste und wichtigste Medicinal-Pflanzen in naturgetreuen Abbildungen mit kurz erklärendem Texte. Atlas zur Pharm. Germ., Austriaca, etc., sowie zur Pharmacopœia of the United States of America. Ergänzungsband, Lieferungen 1 bis 7 incl. Lieferung @ M. 1.00.

John Wiley & Sons—New York. A handbook for farmers and dairymen. By F. W. Woll, Assistant Professor of Agricultural Chemistry, Univ. of Wis., with the assistance of well-known specialists. One vol., pp. XIV, 375.

Wilhelm Engelmann — Leipzig. Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten, insbesondere den Nutzpflanzen. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten herausgegeben von A. Engler, Professor der Botanik und Direktor des botanischen Gartens in Berlin. Lieferungen 141—148.

Felix Alcan — Paris. Nouveau Formulaire Magistral par A. Bouchardat, Professeur d'hygiène à la Faculté de médicine de Paris et G. Bouchardat, Professeur à l'École supérieure de pharmacie de Paris. Trente et unième édition. One vol., pp. 690. 1897. Fr. 3.50.

Friedriech Vieweg und Sohn—Braunschweig. Die Fabrikation der künstlichen Mineralwässer und anderer moussirender Getränke. Von Dr. B. Hirsch, und Dr. P. Siedler. Ein Bd., pp. XII, 393, mit 103 eingedruckten Abbildungen. Dritte, neubearbeitete Auflage. 1897. M. 8.00.

R. Gärtner's Verlagsbuchhandlung—Berlin. Chemish-technisches Repertorium. Uebersichtlicher Bericht über die neusten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 35. Jahrgang. 1896. Zweites Halbjahr. Erste Hälfte, pp. 287—424. 1897.

Smithsonian Institution—Washington. Annual Report of the Board of Regents of the Smithsonian Institution showing the operations, expenditures, and condition of the Institution to July, 1894. One vol., pp. XL, 770. 1896.

Heinrich Haensel—Pirna a. d. Elbe. Bericht der Fabrik ätherischer Oele und Essenzen, 1896. Ein Bd., pp. 112. 1897.

——Reports on essential oils and essences, 1896. One vol. pp. 88. 1897.

Biltmore Herbarium—Biltmore, N. C. Alphabetical Catalogue of the duplicate specimens contained in the collection. Pamphlet, pp. 29.

Kolonial Museum — Haarlem. Bulletin, Maart, 1897. Brochure, pp. 73. 1897.

Reviews.

Köhler's Neueste und Wichtigste Medicinal Pflanzen in naturgetreuen Abbildungen mit kurzerklärendem Texte. Ergänzungsband zu dem in den Jahren 1883—1890 erschienenen Hauptwerke in 2 Bänden. Fr. Eugen Köhler, Gera-Untermhaus. Lieferungen 1—7. Pro Lieferung M. 1.00.

It is doubtless a source of satisfaction to all acquainted with Koehler's excellent work on medicinal plants to learn that the author has already well under way a third volume dealing with the newer drugs which seem to have taken an important and permanent place in materia medica. Seven numbers have already appeared, containing four colored plates each and a corresponding amount of text. The quality of both plates and text in the well-known two-volume work is fully sustained in the new, and, indeed, as regards the plates, seems to excel that of the preceding volumes. One frequently finds in colored plates but little satisfaction, the glaring imitations of the natural colors jarring on one's sensibilities rather than contributing to a better understanding. The plates of the work before us are not of this class, by their moderation and delicacy of tone proving a source of pleasure as well as of instruction. The text, as heretofore, is usually reduced to the necessary minimum.

To choose from among the many candidates for public favor those really most important is no

easy task. The author's choice as indicated by the plates thus far at hand includes the following plants: *Palaquium Treubii* Burck, *Payena Leerii* Benth. & Hook., *Rhamnus Purshiana* D. C., *Landolphia Watsonii* H. B. K., *Palaquium Gutta* Burck, *Palaquium oblongifolium* Burck, *Nigella sativa* L., *N. damascena* L., *Delphinium Staphisagria* L., *Manihot Glaziovii* Müll. Arg., *M. utilissima* Müll. Arg., *Hevea braziliensis* Müll. Arg., *Cola acuminata* A. Br., *Hamamelis Virginiana* L., *Rubia tinctorum* L., *Calendula officinalis* L., *Carex arenaria* L., *Convallaria majalis* L., *Aretemis nobilis* L., *A. arvensis* L., *A. cotula* L., *Artemisia vulgaris* L., *Willoughbya firma* Blume, and *Urceolaria elastica* Roxb.

The great and permanent value of all of the above may be open to question, perhaps, since, with medicines as with clothes, the present fashion may change. Just now in this country the prevailing "fad" is the cola nut. When the prevailing inflation of its value has passed away, it is problematic whether its intrinsic qualities will save it from the ever-ready substitute. And the author does not seem able here to resist the temptation to depart from plain, synoptic statement but quotes the tales of the marvelous doings of negroes sustained only by a cola nut or two.

Nevertheless, we are glad of the illustrations of the plants considered and of the accompanying text, even should the drugs prove in part of but temporary significance.

The ways of the German author and publisher are sometimes inscrutable, hence no attempt will be made here to account for the order, or lack of order, in which texts and plates are appearing. We shall welcome the work as it comes to hand and when it is completed we shall use it feeling that it constitutes a genuine addition to pharmacognostical literature. *Rodney H. True.*

Otto Lueger's Lexikon der gesammten Technik und ihrer Hilfswisseschaften. Im Verein mit Fachgenossen herausgegeben. Mit zahlreichen Abbildungen. Vierter Band. Essigsäure bis Grundtemperatur. Ein Bd., pp. 800. Deutsche Verlags-Anstalt, Stuttgart und Leipzig. 1897.

This monumental work was begun as a five volume work. Under the hands of the editor and his colaborers it was soon discovered that at least seven volumes would become a necessity. The fourth volume closes with the letter G unfinished. That the motives of the publishers in this extension are the very best is sufficiently proven by the fact that anything beyond seven volumes will be delivered to subscribers free of cost. Any surprise on the part of a subscriber at such action will, no doubt, prove a happy surprise. The excellence of the work is such that one takes pleasure in cutting the pages of each new number as it makes its appearance.

As already stated on a previous occasion, this work is of great interest not alone to the engineer. It will be found exceedingly serviceable in every library, not only of institutions of learning, but in private libraries as well. Aside from the space given to engineering proper, including a fair amount of pure and applied mathematics, liberal space is given to subjects of more general interest, and of interest to specialists in other lines bordering on engineering or merely coming in touch with it at a given point.

Thus, e. g., architecture is well represented in this volume under the following headings: Etruskischer Baustil, Fachwand, Filiale, Figurenkapitäle, Gemäldegalerien, Gewölbe, Giebel, and particularly Gothischer Baustil, as well as by numerous minor articles. Aside from applied physics the general science receives its share of attention under Fernrohr, Festigkeit, Feuchtigkeit, Galvanismus, Gase, Gay-Lussacsches Gesetz, Geschwindigkeit etc. Subjects in chemistry and chemical technology are probably second in number to those in engineering. Essigsäure, Färben, Farben and Farbstoffe, Fette und fette Oele, Fichtenharz, Firnis, Flusseisen, Gärung, Gasanalyse, Gasfabrik etc., Gerbstoffe, Geschosstreibmittel, Glas — Glasmalertechnik — Glasuren, Glycerin, Gold are only a few of the more important of the very numerous subjects that might be grouped under this heading. Applied botany appears to be represented in this volume by but one larger article, viz. that on Galläpfel. Mineralogy and geology are represented by numerous minor paragraphs as well as by larger articles under the following primes: Feldspat, Gabbro, Gestein, Glimmer, Granit, Graphit. To enumerate only the longer articles under engineering proper would constitute a fair catalogue. A few of those that have been granted most space and which are more richly illustrated than any others may here be enumerated: Festungsbau, Feuerspritze, Feuerungsanlage, Flachsbrechmaschinen and Flachsspinnerei, Flussregulirung, Gasmachine, Gewehr. Law as applied to the industries is treated under Gesetzgebung, technische. The article Feldbereinigung is of economic interest as well as agricultural. That on Gefängniss borders on sociology. Agriculture, the subject of foodstuffs, fishing etc. come in for their share of attention.

This really meagre statement may give the reader some idea of the scope of the work. Engineering in all its aspects, all sciences and arts bordering on engineering come up for consideration. In this industrial age the importance of reliable information, to the specialist and to the general reader, on innumerable subjects here treated can hardly be overestimated. The very vastness of the undertaking, however, as well as the possibility of placing the same information under a variety of primes seems to make a complete index an absolute necessity. It is sincerely to be hoped that the publishers will not limit the practical utility of this magnificent work by failing to provide a complete index. *E. K.*

Dictionnaire de Physiologie. Par Charles Richet, Professeur de Physiologie à la Faculté de Médecine de Paris. Deuxième fascicule du tome II. pp. 321—640. Felix Alcan, Éditeur, Paris. 1897. Fr. 8.50.

The most prominent feature of the fascicle before us lies in several articles on subjects of physiology proper, which have been treated in a very exhaustive manner. The article on the *medulla oblongata* (bulbe), which was begun in the last fascicle and which was accorded fifty pages, receives forty-five pages more in this number. The closely related subject cerveau receives a similar liberal treatment, remaining unfinished with ninety-four pages. Other larger articles coming in for their fair share of space at least are those on capillaires; cardiographe, with a liberal number of illustrations of apparatus and curves; castration; catalepsie;

and cellule, also with a considerable number of illustrations in the text.

Chemical elements under C brought to notice in this fascicle are cadmium; calcium; carbone, with its two physiologically important oxides, carbone oxide and carbonique anhydride; and cerium. Of the nitrogen bases buxine, cadaverine and caféine may be mentioned; also camphre and caséine, organic chemicals of considerable physiological import. Under the head of physics the subject of calorimètres deserves mention and their application under the prime calorimétric animale. Applied botany or vegetable pharmacognosy are represented by cacao and café; zoology and animal pharmacognosy by cameleon and cantharides.

This fascicle also contains a larger number of minor articles. Whether the editor and publisher will succeed in crowding all they have to offer into five quarto volumes seems doubtful. If the work continues its present excellent characteristics, the addition of a sixth volume, if necessary, will not be regretted by anyone. *E. K.*

Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten, insbesondere den Nutzpflanzen. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten herausgegeben von A. Engler, Professor der Botanik und Direktor des botanischen Gartens in Berlin. Lief. 141—148. Verlag von Wilhelm Engelmann in Leipzig.

Mit der Lieferung 147 ist der vierte Band dieses Werkes vollendet. Die noch fehlenden Theile werden voraussichtlich in Bälde erscheinen, so dass das Werk nunmehr seiner Vollendung schnell entgegen zu schreiten scheint. Auf seinem Gebiete überall als das massgebende botanische Werk anerkannt und allgemein bekannt, bedarf dasselbe keiner weiteren Empfehlung mehr. Da mit der Vollendung des grossen Werkes der relativ billige Subscriptionspreis aufhört, ist dessen zuvorige Anschaffung rathsam.

Die vorliegenden neueren Lieferungen enthalten: Lief. 141: *Fucaceæ*, *Dictyotaceæ*, *Rhodophyceæ*, *Bangiaceæ*, *Rhodochaetaceæ*, *Compsopogonaceæ*, *Thoreaceæ*, *Lemaneaceæ*, *Helminthocladiaceæ* und *Chaetangiaceæ*. Lief. 142: *Gelidiaceæ*, *Acrotylaceæ*, *Gigastinaceæ*, *Rhodophyllidaceæ*, *Sphaerococcaceae*. Lief. 143—145: *Peridiniales*, *Bacillariales*. Lief. 146—147: *Labiatae*. Lief. 148: *Hysterüneae*, *Tuberineae*, *Plectascineae*.

Der mustergiltigen Ausstattung und Illustration des gesammten Werkes entsprechen auch diese Lieferungen, welche über 1000 Einzelbilder enthalten. *Fr. H.*

Anatomischer Atlas der Pharmacognosie und Nahrungsmittelkunde von Dr. A. Tschirch und Dr. O. Oesterle. Lieferung 11. Chr. Herm. Tauchnitz, Leipzig. 1896. M. 1.50.

The present number of this work is one of especial interest and value to all investigating microscopically the purity of drugs and food materials.

The various kinds of arrowroot are described from specimens seen and are excellently illustrated in accompanying plates. Under the term "arrowroot" the authors include practically all the starches of tropical origin, sago excluded. The source, geographical and botanical, the gross characteristics of the commercial article, the microscopic structure, size and behavior in use are described. In this thorough manner the following arrowroot starches are treated: West Indian arrowroot from *Maranta arundinacea* and other species of the same genus; Rio, Para or Bahia arrowroot from *Manihot utilissima* and related species; Queensland arrowroot from *Canna edulis* and its congeners; East Indian or Bombay arrowroot derived from *Curcuma* species; Tahiti arrowroot or "Tacca" starch from *Tacca pinnatifida;* Portland arrowroot from the tubers of *Arum maculatum* and allied species; Brazilian arrowroot from the tubers of *Batatas edulis* and Guyana arrowroot from the yam root, *Dioscorea* species. Banana starch, though not usually known by that name, is sometimes referred to under this last name. Sago from *Metroxylon* species is not classed among the arrowroots. Starch from germinated wheat, from the potato, horse chestnut, bean, pea, millet, buckwheat and *Lolium temulentum* are also described and figured.

The usefulness of detailed, authentic and admirably executed cuts of these starches is hardly to be overestimated.

The number continues with the usual descriptions and drawings of galangal (*Alpinia officinarum*), zedoary (*Curcuma Zedoaria*) and star anise (*Illicium verum* Hook. f). With the latter, the detailed description of the poisonous *I. religiosum* Sieb. is included, and distinguishing characteristics between the true and the false articles are brought out.

For the purposes it is meant to serve, this work leaves little to wish. *Rodney H. True.*

A handbook for farmers and dairymen. By F. W. Woll, Assistant Professor of Agricultural Chemistry, University of Wisconsin. With the assistance of well-known specialists. One vol., pp. xiv, 375, with illustrations. John Wiley & Sons, New York. 1897.

This small volume which the author has made "a compendium of useful information on farm and dairy topics" has grown out of the dairy and agricultural calendars by the same author. As its title indicates, it is written for farmers and dairymen, yet it may prove of interest and value to persons not practical farmers and dairymen, but who have an interest, probably a financial interest, in farming and dairying. This is not infrequently the case with druggists in smaller places, hence the review of an agricultural treatise in a pharmaceutical journal requires no apology.

There are, however, other points at which scientific farming and pharmacy come in touch with each other. The subject of human food materials, treated in a special chapter, is of no less importance to the pursuer of the one calling than it is to the other. Many of the tables, e. g. those on the Comparison of Fahrenheit, Centigrade and Réaumur thermometer scales, of Weights and measures, Statistical tables and others usually found in a calendar, may in the absence of a pharmaceutical calendar in the English language prove fully as valuable in the pharmacy and pharmaceutical laboratory as in the farmhouse and dairy in which intelligent work is accomplished. Although the information crowded into this small volume is not primarily intended for pharmacists, yet some

members of this calling may find it of considerable interest. The book is all the more valuable on account of the cooperation of twenty-six specialists, who have contributed to it. *E. K.*

Contribution II. to the Coastal and Plain Flora of Yucatan, by Charles Frederick Millspaugh M. D. Publication 15, of Field Columbian Museum, Bot. Series, Vol. 1, No. 3, Chicago, U. S. A., December 1896.

The second paper on the Yucatan flora deals with the plant population of the northern part of the peninsula, a region peculiar in its biological characters and differing essentially from the surrounding region. "Here all the plants have a desiccated appearance due to their struggle against drought while in the neighboring areas the wealth of vegetation is marked." While all the bordering country is well watered by large streams, many of them navigable for long distances inland, the plains region has no surface water whatever. The porosity of the coralline substratum is so great that in nearly all parts the rain sinks almost immediately into the crevices and caverns below the surface. The only water supply remaining is in more or less marked surface depressions. These are of three kinds: 1) *sartenejas*, hollows with a marl-like bottom holding temporarily small quantities of water; 2) *aguadas* are merely large *sartenejas* of circular outline from 50 to 100 feet in diameter. These support a growth of mud-loving plants throughout the year. 3) *Cenotes* are deep, perpendicular-walled, nearly circular wells penetrating the floor of the plain opening into an abundant supply of clear, cold, lime-containing water. These *cenotes* are from a few feet to a hundred yards or more in diameter and contain water at a depth of from 30 to 200 feet below the level of the surrounding plain.

The brief account of the physical conditions found in the region under consideration, from which the above facts are taken, is followed by a list of plants collected chiefly by Dr. Gaumer, Sr., Porfirio Valdez and the author, Dr. Millspaugh. A small number of cryptogams were collected, among them several fungi and a *Selaginella* new to science. This contribution adds 120 genera and 272 species to our knowledge of the flora of the peninsula, of which number one genus and thirteen species are new.

To the majority, perhaps, the well known plants found offer quite as much of interest as the list of new species. Among the familiar names noted are the following: *Panicum sanguinale* L., in its usual place along the roadsides; *Portulacca oleracea* L., abundant as a weed in gardens; *Ricinus communis* L., a tree-like herb 10 to 20 feet high, cultivated and wild; *Plantago major* L., an herb 6 to 14 feet high, common on cultivated grounds; *Sambucus canadensis* L., cultivated in several places.

The new species are illustrated by good plates, those of two new fungi being colored. A map showing the principal features of the Yucatan peninsula helps to an understanding of the prevailing conditions. *Rodney H. True.*

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EDITORIAL.

In the Feb. number (p. 36) attention was called to the substitution of such meaningless terms as actrol and ictrol for silver lactate and silver citrate respectively. As far as the literature of the subject was traced it did not become apparent whether the chemical manufacturer, or the physician who first examined these antiseptics, coined these fanciful names. The chemical terms in question are certainly simple and suggestive, and there is no reason whatever except the mercenary motive lurking behind trade-marks for the coining of these new words. If manufacturers are not careful in the practice of having words registered as trade-marks, the people will soon rise in rebellion not only against the abuse, but also against the legitimate use of this privilege.

At present eucalypteol is again making the rounds through pharmaceutical journals, apparently as a new remedy. It is nothing but one of the dipentene dihydrochlorides, $C_{10}H_{18}Cl_2$, prepared in this case from the eucalyptol or better, cineol, $C_{10}H_{18}O$, from eucalyptus oil. If the term dipentene dihydrochloride is too cumbersome for *fin de siècle* physicians and pharmacists, why could not a word be coined that differed from eucalyptol by more than the letter *e*? Inasmuch as eucalyptol is also used in medicine, such practice cannot be sufficiently censured. Ignorance of chemical nomenclature and desire for gain certainly ought not to be accepted as excuse for such practice. At the World's Fair at Chicago a Frenchman* went so far as to attribute different physiological properties to various specimens of dipentene dihydrochloride obtained from different oils containing cineol or limonene, each of which will yield dipentene dihydrochloride when treated with hydrochloric acid under certain conditions. Even when the chemical identity of the substances was pointed out to him, he persisted that they nevertheless were physiologically different. This reminds one of the "good old times" when ammonia prepared from clippings of fingernails from the nobility was supposed to possess special virtues over the vulgar ammonia obtained from camel's dung. That each specimen of dipentene dihydrochloride referred to above sailed under its own fanciful name, goes almost without mention.

* See this journal, vol. 11, p. 219.

Last month the writer took occasion to call attention to the feeling that exists in certain circles against the legitimate patenting of processes by which medicinal substances are prepared. There are no doubt several reasons to which this feeling can be attributed. One lies in the unfortunate association of the name patent with a class of secret preparations. Another reason for this feeling is to be found in the inherent injustice of some of our patent laws by means of which product as well as process is patentable, thus establishing a complete monopoly. There is also a third reason which might be designated as ethical, which is possibly not as unreasonable as the first two mentioned, but which is applied in practice with equal lack of logic by some of its most ardent supporters.

Since then the writer has received a communication from Prof. J. U. Lloyd pertaining to Ethics in pharmacy. Prof. Lloyd has spoken once before

on this subject. At the Detroit meeting of the A. Ph. A. in 1888 he discussed this problem in considerable detail in his presidential address. It is a particularly opportune moment to again bring up this matter. Inasmuch as Prof. Lloyd's communication came unsolicited and without knowledge of the editorial referred to above, it is with pleasure that we are enabled to publish it *in toto*. *E. K.*

Ethics in Pharmacy.

By Prof. *John Uri Lloyd.*

In our ranks we have two classes of apothecaries. One class believes in purchasing supplies and devoting time and thought to the distributing of medicines as purchased. This section of our people feel that personal attention to the sale of goods is most congenial to their taste. The second class believe in experimentation, scientific study, laboratory work and pharmaceutical manipulation. They are as a rule at a disadvantage in commercial matters as compared with their business competitors. The returns from their labor must come largely from the improvements they make in processes and discoveries in science. In my opinion, these men have not been encouraged as they should have been.

It is probably useless for me to say anything in print concerning the most vital issue connected with the welfare of the scientifically inclined apothecary, but I have no objection to expressing my views again. Useless because of the fact that my opinions are not only already well known, but because the majority of those who write on this subject and also who dominate the opinions of others are opposed to my principles.

I believe that as long as we do not have reciprocity elsewhere, the cry of socialism for the scientific pharmacist is a burning wrong to him who studies, thinks and works in pharmacy. Possibly the same pleading might be extended to the salaried professor who is paid for what he teaches, but, as I see the matter, a distinction should be drawn between him and the man who gets no personal return from instruction that enriches others. It seems to me that this distinction has never been drawn. The ethics governing men in salaried or professional positions have been applied to persons situated very differently. I do not know how I can make my words any plainer. Until a corresponding return is made to the public by other inventors, until others give the results of their brain work to competitors both at home and in Europe, I am not in favor of making American pharmacists do so. When a discovery is made in pharmacal lines that by its publication either in the patent office or in public print will not only take from the discoverer the monetary return that belongs to him that invents, but will put the profit of the inventor into the hands of competitors who have no right to this property, I am opposed to a code of ethics that advocates the wrong, notwithstanding the authority that framed the code. The reverse may be true when a rule of action is applied to the professional man, for every discovery heralded abroad adds to his credit, makes him the more conspicuous, increases his value as a teacher and redounds to the interests of the institution with which he is connected. To herald his discoveries is to serve his best interests.

Those in trade who make discoveries, by the application of science and skill that benefit mankind, should, in my opinion, either receive a personal return in the way of royalties from some responsible manufacturer, or should profit directly by their discoveries. If the discovery is of great public value, the franchise should be paid for by the public if it is turned over to the public. It is simply a case of dollars and cents and not one of sentimentality. The dollars of the millionaire inventor, the opulent merchant, the salaried professional man should contribute to the poor pharmacist if his all which is usually brain work in close business lines is to be dropped into their pockets.

In some cases the patent laws will give the inventor full protection, in others they will not do this, but quite the contrary. In some cases the trade mark or copyright laws afford better protection, but these latter schemes will not prevent others from entering the field with the same or similar preparations under other names. Neither should they do so.

I am well aware of the fact that I stand nearly alone in my views in this direction and that I have never been on the popular side. However, this fact does not concern me in the least since I believe that I am right. Some of my closest friends feel now and have always felt that I am a heretic in trade ethics, but I have seen nothing in their arguments or the results of their methods to lead me to believe that I am the sophist. Indeed, I have every reason to feel that in time to come (a long way perhaps in the future) the spirit of our code makers will rise to the fact that a great wrong has been done American chemists and American pharmacists (and largely to the advantage of Europeans) by this unqualified opposition to the personal return of him who spends his life in behalf of real pharmacy. "The laborer is worthy of his hire" and I fail to recognize any argument that excludes the scientific pharmacist from the field of labor, or any ethical axiom that should take from him his just return.

In my opinion, the burning question that the sincere advocate of just pharmacal ethics will have to meet when at last he realizes that discoveries in pharmacy should be recognized in both law and

ethics, is that of unfounded pretensions in those who claim to have made pharmacal discoveries. The question will be how to differentiate between that which is possessed of merit, and impositions. As conditions are now, however, the medical profession and the public are neither spared the extravagant claims of impostors nor guided in the direction of merit. The industrious young man who devotes his all to the acquirement of an education, is placed by the side of the impostor if he protects his own interests and the public.

I must not neglect to say that I do not overlook the noble ethical works of some persons, who in theory stand quite in the clouds. They believe that the returns that come from pharmacal advancement of the individual must be free to all business men and that he who evolves in pharmacy must in public charity give the results of his labors to his business competitors, even though they are rich and powerful enough to crush him. According to these men it is wrong for a struggling pharmacist to keep a process private that he has acquired by long and expensive experimentation, and wrong for a manufacturing firm to pay him a royalty on his discovery. In the minds of these persons, and I have some very dear friends in their ranks, the pharmacist who takes advantage of the trade-mark, copyright or patent law, is unspeakably guilty. I have heard this argument, even from professional men who copyright every book they issue.

For myself, I say now as I have always said, I agree in that charity is a duty, and that it is more blessed to give than to receive. But I have felt it a duty to provide for my family, to acquire as much of an education as is possible, to try and guard against poverty in my declining years, to leave a substantial testimonial of regard to my fellow pharmacists who wish to study and work in real pharmacy, and I could not have done either of these had I permitted myself to be misled or to be drawn away from what I firmly believe is the right. The right of personal returns to individual investigations, be it in pharmacy or in any other line of science advancement, is a birthright and he who uses the legal methods for self-protection in discoveries is doing no more than justice towards himself and his family, regardless of sentimental codes of ethics that strike at the use of these privileges instead of their abuse.

These being my convictions on the most vital question that concerns the pharmacist, I cannot but favor the application of the copyright, trademark and patent laws of our country in the direction of discoveries in pharmacy. I neither understand why that franchise should be left undisturbed in the hands of outsiders who reflect no credit on our art, nor why those in pharmacy who pay their money for education, investigate, make discoveries, and protect their rights by the law that governs all other classes of business, should be classed with pretenders.

I believe that we have in our ranks a regiment of worthy men facing lost opportunities, lost because of the fact that pharmacy ethics of the past offered no inducement for the financial self-protection of meritorious workers. I believe that the blanket opposition our ethical leaders have made to the protection of meritorious discoveries in pharmacy has not only failed to elevate pharmacy, but has largely contributed to the conspicuity of impostors. At least, this inflexible code has not prevented an evil that oppresses Americans and enriches Europeans who allow no sentimental code to hold them back. Alas, I see no hope of overcoming the evil while our ethical leaders follow the foot-steps of their fathers and neither make an effort to encourage those who have something of value to offer the medical profession, nor attempt to distinguish between the true student in pharmacy and the pretender.

Believe me, my dear sir, I am fully aware of the fact that I stand alone in these views, and yet I prefer to be satisfied with myself rather than be with the majority. I prefer to give my charities according to my own judgment and to do business according to the laws of my country rather than give my rights to persons in whom I have no concern, in accordance with the views of men long since dead, none of whom have ever contended with problems that surround pharmacists now, at least, such as have confronted me. And, I will finally add that while I believe most of these extremely ethical men have been conscientious, I may be allowed to say that their bunched opinions did not in my single opinion make them right in days gone by, and neither do they make them right at present. I believe their orthodox views have never served the best interests of those unfortunate men who must make a living by scientific pharmacy; neither have they prevented impositions in medicine. Under this code the pharmacists' life has reached present conditions which might be worse, but not much.

I will close by saying that in this letter I refer only to the ethics that govern the relationship between pharmacists and physicians. I have no experience in the direction of remedies designed for popular medication or in the making of mixtures of well known drugs (secret mixtures) under fanciful titles for self-medication, and would not presume to express an opinion concerning that phase of the question.

It is but proper that as my views in this direction are heretically irregular, I should not involve others in the least. I therefore write in the first person believing that I alone see this matter in the light presented, and that I am the minority of one.

ORIGINAL CONTRIBUTIONS.

The Phenol-Content of the Oil of Monarda Fistulosa (L).

By *E. J. Melzner.*

Last summer a second report was made on the chemical composition of the oil of Wild Bergamot by the writer and Edward Kremers.* In continuing the investigation one of the prime objects was to ascertain something more about the phenol and about the phenol-content of the oil at different seasons. Another was to ascertain what the other constituents of the oil, besides carvacrol and cymene, are. For this purpose a large quantity of oil was necessary. A considerable quantity of oil was distilled last summer with the hope of doing something on both problems. The writer, however, was compelled to drop the subject after having assayed the oil and therefore makes this report on the phenol-content of this oil without taking up any of the other constituents.

The methods of estimation of the carvacrol are described on p. 199 of the volume referred to above. The volumetric estimation was made in a glass-stoppered burette which admitted of accurate reading and in which the petroleum ether† solution of the oil could be shaken repeatedly with the alkali solution until there was no further loss of volume, without having to remove the oil.

The method by titration was followed as described last year. Inasmuch as only a few oils assayed last year were assayed by titration, they were again assayed by the latter method in order to get more accurate data. The crude volumetric results of last year, the more accurate volumetric results obtained this year with the use of the burette for the purpose of measuring, and the results obtained by titration are given side by side. The column headed difference denotes the difference between the data obtained by titration in the third column and those obtained by volume in the second column. It will be seen that the difference is rather large, whereas the difference between the two modifications of estimation by volume is rather small. These data will be found in Table I.

Table I.

Sample.	Percentage of phenol by volume obt. last year.	Percentage of phenol by volume obt. this year.	Percentage of phenol by titration.	Difference.
1.	65.2 p. c.	64.0 p. c.	52.2 p. c.	11.8 p. c.
2.	67.6 p. c.	66.0 p. c.	54.4 p. c.	11.69 p. c.
3.	72.0 p. c.	72.7 p. c.	58.89 p. c.	13.81 p. c.
4.	69.6 p. c.	71.07 p. c.	61.5 p. c.	9.59 p. c.
5.	66.8 p. c.	66.07 p. c.	58.19 p. c.	7.88 p. c.
6.	67.5 p. c.	69.1 p. c.	59.2 p. c.	9.99 p. c.
7.	72.0 p. c.	71.0 p. c.	58.4 p. c.	12.6 p. c.
8.	65.5 p. c.	60.8 p. c.	52.38 p. c.	8.42 p. c.
9.	70.0 p. c.	70.6 p. c.	53.3 p. c.	17.3 p. c.
10.	64.4 p. c.	64.5 p. c.	54.4 p. c.	10.1 p. c.
12.	63.0 p. c.	60.71 p. c.	52.53 p. c.	8.18 p. c.
Average.	67.09 p. c.	66.96 p. c.	55.93 p. c.	11.01 p. c.

During the summer of 1896 weekly collections of the herb were again made. Each batch was distilled as fresh as possible and the sp. gr. of the oil was taken immediately upon distillation. Care was taken this time to weigh the herb as well as the product and thus to obtain some idea of per-

Table 2.

	When gathered.	Part of plant distilled.	Sp. gr. at temp. of room.	Weight of herb.	Weight of oil.	Percentage Yield.
1.	July 6.	Stems and leaves.	0.920, July 8.	17.62 Ko.	156.4 g.	0.88 p. c.
2.	July 13.	Stems, leaves and flowers.	0.902, July 15.	20.93 Ko.	144.32 g.	0.68 p. c.
3.	July 20.	do.	0.928, July 22.	18.31 Ko.	148.48 g.	0.81 p. c.
4.	July 27.	do.	0.930, July 29.	18.00 Ko.	158.10 g.	0.87 p. c.
5.	Aug. 3.	Stems, leaves, flowers and fruit.	0.930, Aug. 5.	19.70 Ko.	159.96 g.	0.81 p. c.
6.	Aug. 10.	do.	0.930, Aug. 12.	17.00 Ko.	156.24 g.	0.91 p. c.
7.	Aug. 17.	do.	0.930, Aug. 19.	17.00 Ko.	156.24 g.	0.91 p. c.
8.	Aug. 24.	Stems, leaves and fruit.	0.926, Aug. 26.	16.80 Ko.	142.60 g.	0.84 p. c.
9.	Aug. 31.	do.	0.931, Aug. 31.	13.10 Ko.	100.55 g.	0.76 p. c.
10.	Sept. 8.	do.	0.922, Sept. 10.	10.20 Ko.	64.54 g.	0.63 p. c.
11.	Sept. 12.	Stems and leaves.	0.930, Sept. 15.	24.00 Ko.	186.4 g.	0.77 p. c.

* [This journal, vol. 14, p. 198. See also vol. 13, p. 207.]
† [A petroleum ether of a rather high boiling point was used.]

centage yield of oil. Inasmuch, however, as some of the herb became partly air-dried on account of the smallness of the still, the percentage yield is neither that of the fresh herb nor of the dried herb accurately considered.

The data in Table 2 are largely self-explanatory as far as any explanations can be deduced from them. Probably as our knowledge of the oil advances it may be possible to draw further conclusions. At present they may be serviceable to obtain an average within proximate limits.

The percentage of phenol in these oils was determined volumetrically with the use of the burette, which allowed of accurate reading; also titrimetrically with $\frac{N}{10}$ iodine solution. The results are given in Table 3. The minimum difference is 3.61 p. c. (No. 9), the maximum difference 17.66 p. c. (No. 4). What the cause of these variations may be, it is too early to discuss. It will be necessary, first of all, to learn more about the non-phenol constituents of the oil.

Table 3.

Number of Oil.	% of Phenol by volume. Burette readings.	% of Phenol by tituration with N|10 Iodine Solution.	Difference.
I.	62.3 p. c.	54.82 p. c.	7.48 p. c.
II.	64.6 p. c.	53.23 p. c.	11.37 p. c.
III.	65.82 p. c.	58.06 p. c.	7.76 p. c.
IV.	68.85 p. c.	51.19 p. c.	17.66 p. c.
V.	67.16 p. c.	59.69 p. c.	7.47 p. c.
VI.	62.5 p. c.	57.12 p. c.	15.38 p. c.
VII.	62.9 p. c.	57.38 p. c.	5.52 p. c.
VIII.	66.6 p. c.	56.5 p. c.	10.1 p. c.
IX.	63.63 p. c.	56.54 p. c.	7.09 p. c.
X.	61.2 p. c.	52.26 p. c.	8.94 p. c.
XI.	58.82 p. c.	55.21 p. c.	3.61 p. c.
Average.	64.03 p. c.	55.64 p. c.	9.31 p. c.

A comparison of the oils obtained in 1895 and those obtained during the corresponding period in 1896 shows that very little difference exists. The average percentage of phenol during 1895 was 66.96 p. c. (by volume) and 55.93 p. c. (by titration) respectively, whereas the corresponding figures for 1896 are 64.03 p. c. and 55.64 p. c.

In order to control the sp. gr. determinations made immediately after the oils were distilled, a second determination was made Nov. 10 of the same year with several of the oils. The results were found to be slightly higher, possibly because the temperature (20°) was slightly lower than when the first determinations were made. The results were as follows:— 0.930 (No. 1), 0.937 (No. 4), 0.933 (No. 8) and 0.934 (No. 11). The rotatory power of several of the oils was also taken in a 200 mm. tube at the same time with the following results:— −2°58′ (No. 2), −2°18′ (No. 6), and −2°25′ (No. 10).

Pharm. Chem. Laboratory,
University of Wisconsin.

Analysis of a Liquid used for Silver Plating.

By *Edo Claassen.*

This liquid was said to be highly recommendable for the above purpose. It had a strongly alkaline reaction and contained besides potassium-silvercyanide some potassium ferrocyanide.

For their quantitative determination 10.441 grm. of the liquid were evaporated on the water-bath, until nearly all water was gone, the remaining mixture then moistened freely with diluted sulphuric acid (1:1), dried and subjected to a somewhat stronger heat to remove the greatest part of the free acid. Extracted with water there remained a residue, which was brought into solution by melting it with potassium sulphate and then dissolving the mass in water. Both liquids were mixed, the silver precipitated by means of diluted hydrochloric acid, the silver chloride weighed after perfectly washing and heating in a porcelain crucible. Its weight was 0.091 grm., corresponding to 0.1264 grm. KCy.AgCy=1.2116 percent. — The filtrate from the silver chloride was somewhat concentrated, then treated with potassium chlorate and precipitated by means of ammonia. The precipitate, after washing, drying and igniting, weighed 0.006 grm. It represented all the iron of the potassium ferrocyanide in the form of sesquioxide, corresponding to 0.0317 grm. potassium ferrocyanide

$$\left(\begin{matrix}159.68 \\ 1\ \text{Mol. } Fe_2O_3\end{matrix} : \begin{matrix}843.64 \\ 2\ \text{Mol. } K_4(CN)_6Fe + 3aq.\end{matrix}\right),$$

which equals 0.3036 percent.

Some Cuban Medical Plants.

By *Robert Combs*, Asst. Prof. of Botany, Iowa State College, Ames, Iowa.

During the years of 1895 and 1896 while I was on the island of Cuba collecting botanical specimens, my attention was repeatedly called to the great number and variety of medical plants and plants used as domestic remedies. In asking information concerning common names, frequency, uses, etc. of plants that interested me, I was often told that the plant in hand was especially valuable as a remedy for "the lungs", "the stomach", "the liver", "the kidneys", or for some other portion of man's anatomy.

At first I considered these statements of the countrymen as mere ebulitions and effervescences of their over obliging natures, but later I began to be much interested in the great number of the so-called "remedios" (remedies).

I found that the country people seldom or almost never called a physician to treat their ills, the grand-mother or the mother of the family usually being so well versed in the medical virtues of the plants about her home that she could successfully combat most of the ailments of her

family. And although the information that I could thus obtain was entirely empirical, I came to the conclusion that many of these "remedies" must have real medical virtues, so I began to inquire of medical authorities on the island and obtained some literature on the subject. Of this I wish to especially mention a paper, "Farmacofitologia Cubana", by Dr. Manuel Gomez de la Maza, Havana, to which work I am greatly indebted for many of the facts herein to follow.

I have arranged the plants in their natural orders according to Durand's "*Generum Phanerogamorum*", and where the plant is represented in my collection, it has been referred by number to the collection.

Dilleniaceæ.

Tetracera volubilis L. and *T. cuspidata* Mey. "Bejuco guará" and "Mantevuilla". Natives of tropical America. They are both excellent diuretics and sudorifics. Employed in intermittent fevers.

Divalla rugosa Poir. No. 713. "Bejuco colorado." Original to the Antilles and the neighboring continent. This plant is used externally in some cases of inflammation. The seeds taken internally are dangerous, being violently drastic and emetic.

Menispermaceæ.

Cissampelos Pareira L. No. 278. "Pareira brava." Antilles, Brazil, etc. It is often used against poisonous snake bites. The fruits are edible. This plant should not be confounded with *Chondodendron tomentosum* R. & Pav., which is from Peru and Brazil and furnishes the true medicinal *Pareira brava* of commerce.

Papaveraceæ.

Argemone Mexicana L. No. 485. "Cardo santo" (Blessed thistle). "Mexican or California Poppy". It is a morphine-producing plant. Its latex is yellow, turning brown on exposure to the air. The latex is corrosive and is used for warts, ulcers, conjunctivitis and chancres. It is a narcotic poison containing morphine in the leaves, root and stalk. It has been recommended in diseases of the bladder and in dermatosis. The seeds contain an oil which has purgative properties equal to those of castor oil (*Ricinus communis* L.) and according to some authors, it equals croton oil (*Croton tiglium* L.). It has also emetic properties equal to those of ipecac. They are somewhat narcotic and as such are used to ease cramp colic.

The flowers are expectorant and emetic.

The plant is a favorite empiric remedy and is used for many and varied disorders by the country people.

Bocconia frutescens L. "Palo amarillo", "Palo amarga." The latex of this plant is caustic, corroborant, vermifuge and drastic. A decoction of the root exhibits the same properties as the latex. It is used as a vermifuge and in jaundice and atonic ulcers. The oil of the seeds is sometimes used against vermin.

Guttiferæ.

Clusia rosea L. No. 501. "Copey" or "Cupey" ("Scotch attorney"). Tropical America. When the leaves or stems are broken, a yellow resin exudes which is much prized by the country folk as a vulnerary, and is said to have other properties, but I know no authority for it.

Garcinia Mangostana L. "Mangostan." The fruits, for their delicious taste and healthful effects, are considered one of the most valuable of the tropics. The epicarp is very bitter and astringent and contains a crystalline principle called mangostin ($C_{20}H_{22}O_5$). The bark of the trunk and branches is astringent and has proven itself useful in the treatment of dysentery, chronic diarrhœa, cystitis, etc. (M. Groupe, in Journal de Pharmacie et de Chemie, Paris, 1874.)

Ternstrœmiaceæ.

Several species are used empirically as astringents, but none are of special importance in Cuba. One, *Eroteum theæoides* Sw., is used instead of tea (*Thea Chinensis* L.) in Jamaica.

Malvaceæ.

Urena sinuata L. No. 46. "Escoba" and "Carapicho." The leaves and roots are emollient and pectoral.

Gossypium herbaceum L. "Algodon". Cotton is not raised to any commercial extent in Cuba, being cultivated only for domestic and medicinal uses.

The therapeutic action of cotton-root bark has long been well known. The recent infusion is considered to be the most efficacious in doses of 3—10 gm., thus used producing the characteristic intermittent uterine contractions similar to those of parturition.

The principal uses are in uterine hemorrhages and fibrous tumors and as an emmenegogue and abortive.

Gossypium Barbadense L. No. 609. "Algodon." This plant, very similar in appearance to *G. herbaceum*, is shrubby and does not yield so copiously as its congener.

It has quite a reputation in some of the West Indies as a galactagogue. A sweetened infusion of 6 to 8 leaves is taken four or five times per day without injurious effects. *Sida* species under the general name of "Malva" are used much by the country folk as emollient and pectoral. The same is true of *Malvastrum* sps. I can not say that any of them have any positive medical value, but from the number of species that were recommended to me by the peasants, I infer that there are one or two species that may be of use.

Sterculiaceæ.

Theobroma Cacao L. "Cacao." Cultivated in Cuba and is important as the plant which yields the much used pharmaceutical vehicle, cacao butter.

Malpighiaceæ.

Byrsonima spicata Cand. "Peralejo de pinares" and other members of the genus *Byrsonima* as *B. crassifolia* H. B. K. No. 16, are used as astringents in cases of dysentery. The whole plant contains much tannin. The ripe fruits are edible but when green are very astringent.

Zygophylleæ.

Tribulus maximus L. No. 33. "Abrojo." A common weed. The leaves are used to make poultices in treating skin diseases. It is also said to be corroborant and diuretic. *Tribulus cistoides* L. has the same properties and uses as *T. maximus* L.

Guiacum officinale L., "Gaïac." The wood of this tree called "Lignum vitæ" is very heavy, having a specific gravity of 1.3. The tree fur-

nishes the guaiac chips and guaiac resin of our drug trade so widely known and used for their general alterative effects. The various constituents, properties and uses are so generally known that they need no discussion here.

Rutaceæ.

Xanthoxylum Clava-Herculis L. No. 376. "Ayuda." The plant has an acrid, bitter taste and is astringent, sialagogue, sudorific, (possessing these properties to a greater extent than does "*Jaborandi*"), diuretic, emmenagogue and doubtfully corroborant. The plant yields a volatile oil which is found in oil glands in all the younger parts of the tree and which gives the tree a very aromatic odor. It contains also a fixed oil, gum resin, tannin, an active principle called xanthopicrin (identical with berberine) and xanthoxylin, a special crystalline principle which quickly produces general paralysis, causing cessation of respiration and circulation in frogs and rabbits.[1] The leaves are considered vulnerary. The bark in various preparations is used in intermittent fevers, dropsy, dyspepsia, diarrhœa, dysentery, syphilis and other diseases.

X. aromaticum Willd., possesses similar properties and uses.

One or two other Cuban members of the genus *Xanthoxylum* are considered medicinal as *X. ternatum* Sw., and *X. emarginatum* Sw. The bark is astringent and is employed in the treatment of gout and syphilis.

Citrus aurantium L. var. *spinosissima* Mey. No. 137. "Limon sylvestre." Said to be original to the Antilles. It grows commonly in a wild state, but the fruits, similar in appearance though smaller than the common lemon (*Citrus Limonum* Riss.) have all the properties and uses of that fruit. It is called "native lemon" while the other is called "French lemon."

Simarubaceæ,

Picramnia pentandra Sw. No. 316. "Aguedita" or "Quina del Pais" (Native Quinine). This plant is considered an excellent substitute for quinine, by the country folks and insurgent soldiers by whom it is much used in the treatment of intermittent fevers, dysentery and cholera.

Dr. Juan Casanova, U. S. vice-consul at Cienfuegos, first called my attention to the plant and its uses. He told me that during the rebellion of 1868—'78, the insurgents would hide away in unhealthful regions, almost deadly to Spaniards, and remain there with impunity, and claimed that this was made possible by the great use that the insurgents made of "Aguedita." Dr. Casanova as an experienced physician claims it to be a worthy substitute for quinine. An article was published several years ago on the subject of "Aguedita",[2] but I have not seen it.

A congener (*Picramnia ciliata* Benth. and Hook.) is used as a febrifuge, while still another (*P. antidesma* Sw.) is used as an astringent and antisyphilitic.

Picrodendron arboreum Planch., (*P. juglans* Gr.) No. 646. "Ganilla." A bitter plant, used as a sudorific refrigerant, purgative and rubifacient. It is also used in venereal diseases.

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[1] Heckel and Schlagdenhauffen, "Academie de Sciences", Paris, Apr. 21, 1884.

[2] "Annales de la Real Academia de Ciencias de la Habana."

Other medicinal plants of this order are: *Quassia amara* L., cultivated in Cuba, *Quassia Cedron* B. & H., of Colombia, Venezuela, Costa Rica, etc., *Simaruba glauca* Cand., and *Simaruba officinalis*, all of which are effective febrifuges.

Burseraceæ.

Bursera gummifera L. No. 486. "Almacigo." This tree is well known to the pharmaceutical world for its gum resin, but it seems not to be appreciated in Cuba as a medicinal plant.

It is much used however for posts, the resin contained preserving them well. Besides this the tree is so hardy, the posts made of the poles often give out roots and leaves and grow, making living posts.

Meliaceæ.

Swietenia Mahagoni L. "Caoba." This tree is known throughout the world as the producer of the beautiful mahogany wood, used so extensively for cabinet purposes. It grows in abundance on the lower hills along the coast and the cutting and shipping of mahogany timber is quite an extensive industry. Besides its technical value it is considered as having a medicinal use. The bark of the tree is a bitter astringent, corroborant, febrifuge, antiseptic and antidysenteric. The seeds contain an oil.

Guarea trichilioides L. No. 49. "Yamoa." "Gamoa" has energetic properties as purgative emetic, emmenagogue, and a powerful abortive. Its poisonous effects are analogous to those of "Manzanillo" (*Hippomane Manzinella* L.).

It is administered in the form of a decoction of the bark of the root, as this preparation seems to lack its dangerous properties.

The milky juice (latex) of the green plant is also used, 3—5 drops being taken in a potion. It has been recommended in syphilis, but it should be used with great precaution and as a last recourse.

Trichilia Havanensis Jacq. No. 348. "Ciguaraya." A decoction of the leaves is used in baths as a general antiarthritic.

It has been recommended in some cases of jaundice and dropsy, various diseases of the liver and spleen, and in syphilis. The species is one of the many plants that has been considered by the empiric as a "rejuvenator of man" in cases of sterility.

Trichilia trifoliata Jacq. "Cerezo Macho." Cultivated in Cuba. This very dangerous plant is much or almost always used for a criminal purpose and often with fatal results. It is one of the most powerful emmenagogues, both its leaves and flowers readily producing abortion and often death with great pain and terrible suffering. The root is purgative as well as abortive.

Celastrineæ.

Myginda Rhacoma Sw. Nos. 452 and 456. This species and three other members of the genus, *M. uragoga* Jacq., *M. latifolia* Sw., and *M. pallens* Sm., are all efficient diuretics.

Sapindaceæ.

Euphoria Longana Lam. "Longán." Cultivated in Cuba, from China. Fruits have a winy taste and are refrigerant.

Nephelium lappaceum L. "Rambustán." Cultivated, from India. Its fruits are pulpy, sweet and edible, seeds narcotic, bitter.

Nephelium Lit-chi Camb. "Litchi." Cultivated in the Antilles from tropical Asia. Its fruit is sweet, rather acid, refrigerant and pectoral. Used to make refreshing adjuvenant drinks in treating slow fevers.

Anacardiaceae.

Mangifera Indica L. "Mango." No. 695. A native of India, but is cultivated in nearly all tropical countries. Naturalized in the West Indies where it is a much prized fruit.

Much has been written concerning its medicinal value and very varied properties and uses have been claimed for it, but there is much lack of scientific verifications. Howe and other authors claim that it is useful in catarrh, diphtheria, pulmonary tuberculosis, bronchitis, intestinal and uterine hemorrhages, diarrhœa, leucorrhœa and nephritis, considerably decreasing the albumen in the urine in certain cases of albuminuria, but without any especial therapeutic action accompanying the decrease. Its principal pharmaceutical preparation is the fluid extract; dose 15—30 drops.

Anacardium occidentale L. No. 310. (Cashew tree.) Common throughout the West Indies and naturalized in all tropical countries. Its oily fruits are edible.

Spondias lutea L. No. 24. "Jobo." A large tree whose beautiful yellow fruits are often eaten although claimed to be injurious by some. They are very acid and have an excellent flavor.

Spondias purpurea L. No. 722. A low, spreading tree, blossoming in winter. The fruits are well developed before the leaves are put forth in May. It is a fruit much prized by the country people.

Comocladia dentata Jacq. No. 712. "Guao." Common in savannahs. This shrub much resembles our innocent sumach (*Rhus glabra*) in appearance, but it possesses all the poisonous effects of poison ivy (*Rhus toxicodendron*) as far as *Rhus* poisoning is concerned at any rate. It is said by the natives to be very poisonous when taken internally, but I have no scientific authority at hand. The plant when disturbed gives off an odor very similar to that of a skunk. The milky juice when applied to the skin is caustic, producing a black spot slowly turning to an inflamed blister lasting from 6 to 10 days before healing.

This juice is milky in color when it first exudes, but quickly turns brown and then black upon exposure to the air.

It is often used as an indelible ink and is very good for marking linen.

Moringeae.

Moringa pterygosperma Gaertn. No. 177. "Ben," "Paraiso frances." Cultivated in Cuba from tropical Asia. Dr. Gomez de la Maza reports an analysis or examination[3] that he made of the oil of the seed or nut. ("Aceite de Ben.")

A portion of the oil does not become rancid and has about the consistence of vaseline. He recommends this portion as a laxative for infantile patients.

Leguminosae.

Acacia Farnesiana Willd. No. 448. "Aromo Amarillo," "Cují." Occurs in nearly all tropical countries and is cultivated in the temperate zone.

A gum exudes from the bark.

[3] "Revista Eciclopedia" Havana, 1886, No. 4.

The legumes are used in some degree in tanneries for the little tannin they contain. Infusions and decoctions are made of the legumes, used in the treatment of inflammations of the skin, eyes and throat. An aqueous distillation of the flowers gives a volatile oil of slight odor and marked corroborant and antispasmodic properties, much used in gastralgia.

By alcoholic distillation an elegant perfume is obtained.

Cæsalpinia echinata Lam. "Palo de Brazil." Cultivated in Cuba. This plant furnishes the wood called in Cuba, "Brazil wood", very much used by dyers. It contains a coloring principal called Brasilin, $C_{22}H_{20}O_7$, which when subjected to dry distillation, at a temperature of 130° C., yields resorcin (Metadioxybenzol), $C_6H_6O_2$, which has all the properties of resorcin of benzene origin.

Cæsalpinia bijuga Sw. No. 455. "Guacamaya de Costa." Common in tropical countries. The bark of this tree (old trees, 25 years old) is used by dyers for the tannin it contains.

Cæsalpinia pauciflora B. & H. No. 97. This species is also utilized for the tannin that it contains.

Cæsalpinia pinnata Sauval. and *C. coriaria* Willd. Both known by the common name of "Dibidibí." Their legumes contain much tannin, which makes an excellent black dye, used much by dyers. The tannin of the latter species differs from that of nutgalls. It also contains gallic acid. A great deal of "Dibidibí" is exported to Europe from South America, but I can not say to what extent the industry exists in Cuba.

Cæsalpinia pulcherrima Sw. No. 629. "Guacamaya." Original to India, but is cultivated and naturalized in most tropical countries. Used very much as a decorative plant, its red flowers being considered very beautiful.

The leaves are corroborant and emmenagogue to the extent of producing abortion.

The leaves and flowers are both used in the treatment of intermittent fevers.

The root is acrid and said to be toxic.

Cæsalpinia adnata G. M. (*Peltophorum adnatum* Gr.). "Moruro abey." Endemic in Cuba. The plant is astringent, its bark and leaves being much used by peasant woman in the form of a decoction to contract the vagina in order to simulate youth and virginity. This is said to be an extensive practice in Brazil, other leguminous astringents (*Acacia* and *Mimosa*) being also used, where they are called by the significant name of "Corteza de joventud y de virgindad" ("Youth and virginity bark").

Pœppigia procera Presl. No. 322. "Pengue." The tannin that this tree contains is utilized in various ways, among other uses is that of vaginal contractor by the peasants, similar to *Cæsalpinia adnata* G. M. A decoction of the bark has been recommended for erysipelas, but does not produce favorable results.

Abrus precatorius L. "Peonia de St. Thomas." Native to India. Naturalized in Cuba, etc. The beautiful red beans of this plant are widely used under the name of jequerity beans, the infusion of which is so renowned for its production of granulations in the treatment of conjunctivitis.

It has also been used in the form of a thick paste-like emulsion (Dr. Schoemaker, Philadelphia), in cases of epithelioma, lupus and gangrenous ulcers with very good results.

Some authors claim that jequerity owes its properties to an active principal which it contains, called jequeritin, while others claim that the bean itself has no action and accredit all the therapeutic value of the infusion to a bacillus isolated and described by Sattler, which is found in the infusion of the bean. However, be this as it may, jequerity infusion is a most valuable remedy.

Piscidia Erythrina L. "Guamá hediondo." (Called "Dog Wood" in Jamaica.) Original to Mexico, Florida and Antilles. The bark of the root is a valuable nervous sedative, having an advantage over opium in not producing dullness, stupor and constipation. Dr. Ott of Philadelphia claims the extract of *Piscidia* is narcotic, dilating the pupils and reducing the pulsations of the heart. It retards the respiration and in large doses produces general paralysis, causing death by asphyxia. It is also sudorific and sialagogue, in all, has a general action similar to morphine. It is used as a hypnotic and in treating neuralgias of various kinds. (To be continued.)

Koch's New Discoveries on Tuberculosis.

By Prof. *H. L. Russell.*

Six years ago, Robt. Koch announced to the medical world, and it was soon heralded far and wide, that he had discovered a new cure for consumption. The reputation of its discoverer gave it a prestige that does not usually accrue to the frequent consumption cures of the present day.

Hundreds of patients in all stages of the disease journeyed to Berlin, even in the dead of winter, to grasp at this last hope that was held out to their relief. Much misconception concerning its efficiency existed. Koch himself was never as positive as many of his friends, and while the treatment of infected animals with tuberculin was eminently successful, the application of the method to the diseased human being did not meet with the measure of success that was expected, although in numerous cases where the disease existed in the incipient form, it arrested the disease processes and in many cases complete cures were effected.

As a diagnostic agent, especially in the bovine form of the disease, the original tuberculin of Koch has been a great success. It, however, contains certain irritating principles that are undesirable, and Koch's efforts for the last six years have been continually directed toward the preparation of a product that would be free from all these properties but which would contain the necessary immunizing substances. It seems as if success has at last crowned his efforts. The Deutsche Med. Wochenschrift of April 3rd, 1897 contains an account of these new discoveries with reference to tuberculosis.

From his observations Koch concluded that the affected patient gradually acquired a degree of immunity by reason of the disease. There occurs a stage in which the tubercle bacilli are very plenty, but in the course of time these often disappear. This immunizing stage, however, occurs too late in the course of the disease to be of any service to the patient, but if it could be artificially produced at an earlier date, he thought it might enable the patient to check the progress of the malady. Koch conceived that this immunizing process must be due to the reabsorption of certain constituents of the bacilli themselves.

The remarkable resisting properties of the tubercle bacillus, Koch had previously determined to be due to the presence of certain fatty acids that form a layer around the body of the bacillus. Rather than to use strong chemical agents that would break up these and other compounds, and thus render possible the absorption of the essential immunizing substance, he dries highly virulent tubercle cultures thoroughly, then triturates them in an agate mortar. In this way he ruptures the organism, thus permitting the extraction of the soluble constituents from the finely comminuted mass. This fluid is then centrifuged. The first extract obtained is a slightly opalescent fluid which he calls tuberculin O (TO). The sediment in the centrifuge is then dried, and digested with water and again centrifuged. This is continued until the water is perfectly clear. These later extracts contain the essential immunizing principle which he calls Tuberculin R (TR). TO contains mainly those elements soluble in glycerin; therefore, it is similar to the original tuberculin of 1890, while TR is insoluble in glycerin.

The introduction of TR in large doses into tuberculous patients produces a reaction, but if the initial dose is very small (1/500 mg.), usually no effect is observed. If the patient is injected once in two days with gradually increasing doses, he soon becomes immunized against large doses. Koch continues the administration of the tuberculin until a dosage of twenty mgr. is reached. If no reaction follows, immunity in the course of a short time is complete.

Guinea pigs infected with the disease can only be cured where the treatment is begun soon after infection (1—2 weeks). But little hope is offered to those persons in the advanced stage of the disease, especially where secondary infection of a septic nature has occurred. Where the body temperature is above 100 degrees F., this treatment is only occasionally of value. Koch has already treated a large number of patients affected with consumption of the lungs as well as lupus with very favorable results. He refrains, however, from pronouncing these cases entirely cured as not sufficient time has elapsed to definitely determine this point, but the application of the tuberculin has almost invariably been followed by a reduction in temperature, increase in weight, and a gradual but steady improvement in symptoms and general condition.

As the tuberculin is prepared by grinding, in a dried form, the deadly tubercle bacilli, the process of manufacture is fraught with considerable danger. The Farbwerke at Hoechst am Main, where Behring's Diphtheria antitoxin is prepared, have been entrusted with the preparation of the material.

The medical world will await with intense interest confirmation of this report, and it is sincerely to be hoped that the long continued labors of this Great Master of Bacteriological science will be finally crowned with success. Koch's name is so indissolubly linked with the discovery of the cause of consumption that a successful method would triumphantly crown his labors.

The closing decade of the nineteenth century is indeed yielding rich fruitage in the advances that have been made in the healing art, more particularly in the application of bacteriological science to the prevention and cure of contagious diseases.

The Univ. of Wis., Agrl. Expt. Station

MONTHLY REVIEW.

Chemistry.

Morphine-methyl Hydroxide.

E. Vongerichten compares this compound with the known phenolbetaïnes and converts it into codeine-methyl iodide and methyl morphimethine.

[Berichte, 30, p. 354.]

The Digitalin Reaction.

A. Beitter shows that the Keller-Kiliani reaction for digitalin is also produced by cinchotannic acid. A positive result with the Keller-Kiliani reagent is therefore not positive proof of the presence of digitalin.

[Arch. f. Pharm. 235, p. 137.]

On the Constituents of Black and White Mustard.

J. Gadamer has made a report of over seventy pages full of experimental data. The author does not consider his investigation as concluded. Inasmuch as it would be difficult to give an adequate idea of the article in an abstract, the original will have to be consulted by those interested. [Arch. f. Pharm. 235, p. 44.]

Periplocin.

According to the report of Zimmer & Co. periplocin is a crystalline glucoside, $C_{30}H_{48}O_{12}$, which has been isolated by Lehmann and Burschinsky from the Indian "Hundswinde", *Periploca græca*. It melts at 205°, is readily soluble in alcohol, difficultly in ether. In cold water it is more readily soluble than in hot. It is a powerful heart-poison possessing great similarity in this respect to digitalin, strophantin and quabaïn and deserves to be examined as to its medicinal value.

[Zeitsch. d. allg. oester. Aptver., 1897.]

Dourahinha or Folia Palicoureæ rigidæ H. B. K.

This Brazilian drug was examined chemically and more specially pharmacologically by C. G. Santesson. He obtained a poisonous basic substance, douradine, which may possibly be identical with the palicourine of Peckolt. The solution of another even more poisonous substance, possibly an acid, was also experimented with.

The drug itself is described by Elfstrand as a diuretic and diaphoretic and is said to act on the heart similarly to digitalin. [Arch. f. Pharm. 235, p. 143.]

Nux Vomica and Ignatius Bean.

An examination of several constituents of these two drugs was made by G. Sander. I. He shows that igasuric acid from both is identical and that it is caffeotannic acid yielding upon hydrolysis with potassa a sugar and caffeic acid. II. The various methods of assay are reviewed and criticized. The gravimetric method of C. C. Keller is considered the best and some slight modifications are tried and suggested. III. The methods of separation of strychnine and brucine are discussed. The author is of the opinion that the two alkaloids are present in the drugs in a simple and constant ratio.

[Arch. f. Pharm. 235, p. 133.]

The Application of Potassium-Bismuth-Iodide in the Isolation of Organic Bases.

E. Jahns discusses the use of this Dragendorff's and Kraut's reagent for the purpose of isolating organic bases from plant extracts. To the list of occurrences of choline in plants given by Kunz-Krause in his translation of Guareschi's work on alkaloids he adds the following:—Chamomile flowers, millfoil, melilot, malva leaves, *Herb. Cochleariæ*, anise, elder bark, seeds of false acacia. The bursine of Bombelon obtained from the shepherds purse is identical with choline. In small quantities (up to 0.2 p. c.) it is found together with less betaine in the seeds of *Lathyrus sativus* and *L. Cicera*.

[Arch. f. Pharm. 235, p. 151.]

Asparaginic Acid.

Based on the observations of Becker (Ber. 14, p. 1035), Landolt (Ber. 13, p. 2334) has pronounced asparaginic acid obtained from l-asparagine laevogyrate. Piutti, (Ber. 19, p. 1691), on the other hand, found it to be dextrogyrate and Marshall (J. C. S., 69, p. 1022), has recently verified this observation. The statement of Pasteur that the solution of asparaginic acid to which acid has been added is dextrogyrate, and that the alkaline solution is laevogyrate has never been contradicted.

Ellen P. Cook at the request of Prof. Landolt has recently gone over the field and concludes that Becker's acid probably was not totally free from alkali. A single drop of soda solution is sufficient to change the angle rotation. [Berichte, 30, p. 294.]

Physosterine.

After giving Hesse's definition of physosterine and reviewing the history of the vegetable cholesterines, H. Thoms reports on the results obtained by the application of Liebermann's and Hesse's reactions to 1) cholesterin from gall-stones, to 2) phytosterin from cottonseed oil, 3) from grass leaves and 4) from belladonna leaves, 5) β-amyrin, 6) cinchol, 7) onocol, 8) onoketone, 9) resin acid from onoketone, 10) abietic acid, 11) benzo-resinol.

It is pointed out that the so-called cholesterin reaction cannot be due to the alcoholic character of this class of substances. Phytosterines are defined temporarily as those high molecular, unsaturated alcohols of the vegetable kingdom which give color reactions like those or similar to those of cholesterin, and whose formation is caused by like physiological processes in the vegetable organism.

[Arch. f. Pharm. 235, p. 39.]

Onocerin or Onocol from Ononis Spinosa.

Besides the glucoside ononin and other substances the root of *Ononis spinosa* L. contains a compound onocerin isolated by Hlasiwetz in 1855. According to H. Thoms this substance is a di-secondary alcohol of the formula $C_{26}H_{42}(OH)_2$, melting at 232°. It yields a diacetyl and a dibenzoyl derivative. The name onocerin, which suggests a wax of ester-like composition, should be replaced by the name onocrol indicative of its alcohol character.

Upon oxidation with chromic acid mixture it yields a crystalline diketone melting at 186—187°. This onoketone has the composition $C_{26}H_{40}O_2$. Its di-ketone

character was determined by the hydrazone, $C_{26}H_{40}(N.NHC_6H_5)_2$, the ketoxime, $C_{26}H_{40}(NOH)_2$, and the semicarbazone, $C_{26}H_{40}O.N.NH.CO.NH_2$.

Upon further oxidation butyric acid, acetic acid, an acid of the composition $C_{20}H_{38}O_2$ and a monobasic resin acid $C_{20}H_{30}O_5$ were obtained. The formula, $C_{19}H_{29}.CO.CH_2.CO.CH_2.CH_2.CH_2.CH_3$, is to partially express the structure of the onoketone.

[Arch. f. Pharm. 235, p. 28.]

Picrotoxinin.

The fruit of *Anamista cocculus* contains a bitter principle, picrotoxin, which is a powerful poison. It has been shown by several authors that the picrotoxin of commerce is no simple substance, but a mixture. From it a pure picrotoxin, melting at 199 to 200°, can be obtained. This picrotoxin can be resolved into picrotoxinin and picrotin by prolonged boiling with benzene or chloroform. E. Schmidt supposes picrotoxin to be a chemical unit, whereas others regard it as a mixture evidently of definite composition, which is compared to a "solid solution". R. J. Meyer has recently investigated this controverted problem. He finds that the molecular weight of picrotoxin is but one-third of what it ought to be if Schmidt's formula $C_{30}H_{34}O_{13}$ is taken to be correct. He also obtains according to different methods only 34 p. c. of picrotin. Synthetically he obtains picrotoxin from the hot aqueous solution of two molecules of picrotoxinin and one molecule of picrotin. On the method of separation of the two compounds by means of strychnine or brucine the author expects to report more fully later, also on several of their derivatives.

[Ber. d. pharm. Gesellsch. 7, p. 16.]

Caffeïdine carbonic acid.

According to Malz and Andreasch (Monatsh. f. Chem. 4, p. 369) caffeine can be converted into caffeine-carbonic acid when treated with dilute alkali. When heated its solution is decomposed into carbon dioxide and caffeïdine. E. Fisher and O. Bromberg recently tried to reverse these reactions. Caffeïdine carbonic acid can be reconverted into caffeïne when heated with phosphorus oxychloride, but an attempt to introduce carbonic acid into caffeïdine was not successful.

[Berichte, 30, p. 219.]

Sparteïne.

Sparteïne when oxidized yields a number of oxydation products of which oxysparteïne, $C_{15}H_{24}N_2O$ (Ber. 24, 1095), and dioxsparteïne, $C_{15}H_{26}N_2O_2$ (Ber. 20, 2219 and 25, 3609) are of special importance. The nature of the oxygen atoms that have entered during the process of oxidation is of interest as indicated e. g. by the physiological properties of the two oxycompounds. Oxysparteïne produces an increase in the heart activity. Although the pulse beats less the work of each beat and the sum total of the work is increased in most cases. Dioxysparteïne, on the other hand, has an inverse effect upon the heart.

Chemical investigation by Felix B. Ahrens has shown that the oxysparteïne contains an aldehyde group and the dioxysparteïne contains two hydroxy groups. The experiments upon which their conclusions are based can best be obtained in the original.

[Berichte, 30, p. 195.]

Curcumin.

Ciamician and Silber have taken up the investigation of this interesting coloring matter where Jackson and Menke have left off. According to Zeisel's method they proved the presence of two methoxy groups, assigning to the compound the formula $C_{21}H_{20}O_6 = C_{19}H_{14}O_4(OCH_3)_2$ whereas J. and M. found but one methoxy group. A diacetyl derivative is also prepared to which the formula $C_{19}H_{12}O_2(OCH_3)_2(OC_2H_3O)_2$ is assigned. Dimethylcurcumin was also prepared. Furthermore, condensation products with hydroxylamine and phenylhydrazine were obtained, the exact nature of which is not yet known.

[Berichte, 30. p. 192.]

Camphor.

Camphor and its derivatives have recently come in for their full share of investigation as indicated by the following titles:—

Ferd. Tiemann contributes several papers on this subject describing a number of derivatives.

Second contribution (p. 242).

In the third contribution (p. 321) principally nitrogen derivatives come up for consideration.

In the fourth contribution (p. 404), dihydro- and other compounds of this group are reported on.

[Berichte, 30, pp. 242, 321 & 404.]

The Oxydation Products of Camphoric Acid.

L. Balbiano reports on an acid $C_8H_{12}O_5$, the principal product of oxidation resulting when camphoric acid is oxidized in alkaline solution with potassium permanganate. [Berichte, 30, p. 289.]

Campholene.

Based on a number of experiments made by himself and others Ferd. Thiemann assumes that campholene is a tetramethyl derivative of a ring with five members and that upon rearrangement it is converted into a tetrahydropseudocumedene. [Berichte, 30, p. 594.]

On the Oil of Levisticum officinale.

The oil from the root of this plant, which had not been examined chemically previously, was made the subject of an investigation by R. Braun. He isolated the following substances:—

I. A compound $C_{10}H_{18}O$ resembling cineol, but no crystalline derivatives with the hydrohalogen acids were obtained.

II. A compound $C_{10}H_{16}$ resembling limonene, but not identified as such.

III. Isovalerianic acid.

IV. Acetic acid obtained as an oxidation product.

V. Benzoic acid.

[Arch. f. Pharm. 235, p. 1.]

Odorless Turpentine Oil.

It is supposed that the odor of turpentine oil is not due to its principal constituent, pinene, but to an oxydation product of this hydrocarbon. This oxydation product is supposed to be an aldehyde, probably $C_{10}H_{16}O_3$, and to it the strong odor of ordinary turpentine oil is said to be due. It is generally known that upon rectification with water vapor, especially after the oil has

been shaken with lime water or milk of lime, the oil assumes a much more pleasant odor. However, the amount of aldehyde is said never to exceed one percent, because it soon condenses with the elimination of water forming resinous substances, thus causing the thickening or resinification of the oil. E. von Szigethy has recently obtained an odorless turpentine oil by rectification in partial vacuum (12 mm.) or rather in a rarified atmosphere of carbon dioxide. Szigethy claims that the odor of turpentine oil is due only to the oxidizing influence of the air.

[Neueste Erfahrungen und Erfindungen, 24, p. 173.]

Adulteration of Anise Oil.

The oils from anise and fennel have at least one constituent in common, viz. anethol, by means of which the quality of both oils are largely judged in commerce. The chemists of Schimmel & Co. have found that the stearoptene of fennel oil is used for the adulteration of anise oil. The observations made for years indicate that anise oil is always slightly lævogyrate (up to $-1°50'$), fennel oil is strongly dextrogyrate. Inasmuch as the fennel stearopten not only contains anethol but usually the dextrogyrate fenchone, the addition of such stearoptene to anise oil materially affects the rotatory power of the latter.

[Bericht Schimmel & Co., April 1897, p. 5.]

Chemical Composition of Basilicum Oil.

The chemists of Schimmel and Co. have examined basilicum oil from the island of Réunion. As principal constituent methylchavicol, the methyl ether of p-allylphenol, $CH_3O.C_6H_4.CH_2CH=CH_2$ (1:4), was isolated. This was identified 1. by oxidizing it to homo anisic acid, $CH_3.O.C_6H_4.CH_2COOH$ (1:4), and by anisic acid $CH_3.O.C_6H_4COOH$ (1:4); 2. by converting it into anethol, p-propenyl phenolmethyl ether, $CH_3.O.C_6H_4.CH=CH-CH_3$ (1:4), when heated with sodium alcoholate. The oil was found to contain 60 p. c. methyl chavicol, the determination of the methoxy group being made, according to Zeisel's method.

Of other constituents the following were identified:—

1. Pinene, $C_{10}H_{16}$, by means of the nitrolbenzylamine base, melting at 123°;

2. Camphor, $C_{10}H_{16}O$, identified by means of its oxime; and

3. Cineol, identified by means of Wallach's hydrobromic acid reaction as well as by means of the iodol reaction.

A basilicum oil obtained from the Miltitz experimental farm contained only 25 p. c. methyl chavicol. Dupont and Gueslain (Compt. rend. 124, p. 300) have also recently examined French basilicum oil and found lævogyrate linalool besides methyl chavicol (estragol).

[Ber. Schimmel & Co., April 1897, p. 8.]

Pullegone from Citronellal.

In a former report F. Tiemann and R. Schmidt have suggested structural formulas for citronellol, citronellal and citronellic acid. They also demonstrated that upon dehydration citronellol could be converted into a cyclic alcohol, isopulegol, which alcohol upon oxidation yielded the ketone isopulegone. These compounds in many respects closely resemble pulegol and pulegone, but still are pronounced different from their respective isomers. In a more recent contribution they now show that by shaking isopulegone with aqueous barynm hydroxide solution for 50—60 hrs. or by letting it stand with an alcoholic solution of the same alkali for the same length of time, it is converted quantitatively into pulegone. Of the several possible explanations some credence at least seems to be given to the assumption that the iso compounds have a cycle of five members whereas pulegone is known to be a derivative of hexa methylene. [Berichte, 30, p. 22.]

Oxydation of d- and l-Citronellol.

Having established the formula $(CH_3)_2 C:CH.CH_2.CH_2.CH(CH_3).CH_2COOH$ for citronellic acid, F. Tiemann and R. Schmidt have made a special study of the oxydation of the lævo as well as the dextro forms of citronellol. The oxydation of the dextro form, as the cheaper, was studied first. The experience gained was then applied to the study of l-citronellol (rhodinol) from rose oil and from Réunion-geranium oil (réuniol). In addition to citronellal and citronellic acid, isopulegone was isolated in the form of its carbazone. The authors are of the opinion that the supposed menthone of Barbier and Bouveault (C. r. 122, 727) is identical with isopulegone. [Berichte, 30, p. 33.]

Alcoholic Fermentation without Yeast-cells.

E. Buchner states that the separation of fermentation from the living yeast cell had not been accomplished heretofore, but he recently reported a method by which this could be accomplished. Beer-yeast was deprived of all possible external moisture and triturated with quartz sand and infusorial earth. The resulting magma yielded under great pressure a filtrate, which, even when filtered through a sterilized Berkefeldt infusorial earth filter, caused fermentation in concentrated solutions of cane sugar, glucose, fuctose and malt sugar. No fermentation was caused in concentrated solutions of milk sugar and mannitol. Neither are solutions of these two substances fermented by the living yeast cell.

As to the nature of the substance in solution that causes the fermentation, further experiments are to be made. [Berichte, 30, p. 117.]

Compounds from Lichens.

O. Hesse continues his report (See Ber. 28, Ref. p. 288) on substances obtained from lichens. Usnenic acid was obtained from *Usnea barbata*, *U. longissima*, *Parmelia caperata*, *Cetraria pinastri*, *Cladonia rangiferina* and *Placodium saxicolum* and in all cases was found to have the composition $C_{18}H_{16}O_7$. The same acid had been found in *Cl. rangiferina* by Rochleder and Heldt, (Ann. 155, p. 51), whereas Hesse had found a β-usninic acid in the same lichen. Stenhouse (Ann. 117, p. 346), then called it cladoninic acid. A mixture of *Cl. rangiferina* and *Cl. rangiformis* yielded more of this acid but a closer examination revealed it to be a mixture of the ordinary usninic acid and atranorinic acid, a decomposition product of atranorin. The substance obtained by Paterno and Oglialoro from *Lecanora atra* also seems to be a like mixture. Atranorin and several other lichen acids chrysocetraric acid, cetrapinic acid, vulpinic acid, rhizocarpic acid, prosomic acid, etc., are also discussed in this paper. [Berichte, 30, p. 357.]

Botany and Pharmacognosy.

On the Biological Relations of Leaf and Blood Coloring Matters.

A general review of the relations of leaf and blood pigments as revealed by recent researches is made by M. Neucki. The reader is referred to the article itself for details, it being hardly practicable to prepare a satisfactory abstract in brief compass.

[Ber. d. D. Chem. Gesellsch. 18, 1896. Translated by Dr. G. C. Diekman in The Journal of Pharmacology, 1897, p. 68.]

Monsonia ovata.

This plant belongs to the natural order *Geraniacea* and to the same section as the genus *Geranium*. It might, therefore, be expected to possess astringent properties like those of *Geranium maculatum* of the United States. It is interesting to note that a tincture of *Monsonia ovata* prepared with rectified spirit (2½ ozs. to the pint) has been used with very great success in the treatment of dysentery by J. Maberly M. R. C. S., who publishes a long record of cases that should go far to prove the medical efficacy of this little known drug. It is an annual plant growing in the Vaal River district and probably elsewhere in Africa. It must be collected in January or February. The seeds have been brought to England in the hope that the plant might be successfully cultivated.

[Pharm. Journ., 1897, p. 162; from Lancet, Feb. 6, p. 368.]

Cellulose Inclusions in Cell Walls.

The closer study of the structure of thickened cell walls has shown inclusions of calcium oxalate and more rarely of calcium carbonate crystals overlaid and enclosed by layers of secondary thickening materials. Dr. Carl Mueller finds in parenchyma cells adjoining the endodermis in the roots of *Spiraea filipendula* thickenings in the angles adjacent to the intercellular spaces caused by enclosed masses of cellulose. In cross section, these cellulose masses have a quadrate or rhombic outline and resemble calcium oxalate crystals. They are elongated and pointed at each end. Each cell of the region in question contains such structure. The microscopic reactions show these masses to be sharply defined, cellulose masses imbedded in the cellulose walls. How widely spread this phenomenon is to be found, cannot be said.

[Ber. d. deutsch. pharm. Gesellsch., 7, p. 11.]

Honey-dew.

There has been much discussion as to the origin of the droplets of sweet secretion which fall from trees in mid-summer, sometimes in such abundance as to cover the pavements, and especially the twigs and lower leaves. In 1884, Boudier concluded that it was wholly of animal origin. In 1891, Büsgen in his important memoir on honey-dew seemed to support this view, though he discussed only the sweet secretion produced by insects. But various botanists, agriculturists and entomologists had pointed out clearly a two-fold origin of honey-dew. M. Gaston Bonnier has reinvestigated the question both by observation and experiment. He comes to these conclusions.

Honey-dew, while more commonly the product of *Aphidæ* and *Coccinellidæ*, is also of plant origin, as may be demonstrated by direct observation of the sweet droplets, as they appear at the stomata. The animal honey-dew appears during the day, the plant during the night, with a maximum at day-break. The conditions which favor its production are cool nights and hot, dry days. Increased moisture in the air and cloudiness favor it, other things being equal. Severed branches plunged in water, with the leaves shaded and in a saturated atmosphere, will produce honey-dew at the stomata, even when those on the tree are not doing so. The plant honey-dew in chemical composition approaches more nearly the nectar of flowers than it does that of aphides.

[Bot. Gaz. 23, p. 140; from Am. Bot. 10, p. 489.]

Development of Citrus Fruits.

M. Biermann has studied in detail the developmental history of the fruit of *Citrus vulgaris* and of related species and developes a number of interesting points.

The oil reservoirs of this family, the *Rutaceæ*, are usually referred to the lysigenetic order of formation, i. e., arising by the absorption of a group of cells as distinguished from the schizogenetic method, arising as an intercellular space by the separation of cells. Dr. Biermann finds that in reality the reservoirs in question arise primarily in a schizogenetic manner and are subsequently enlarged lysigenously.

Calcium oxalate crystals are present in different parts of the fruit wall. The crystal arises in the plasma of the cell and on reaching the proper size surrounds itself with a membrane consisting of unmodified cellulose. Thus enveloped, the crystal crowds away the protoplasm at one side of the cell and frequently attaches itself to the wall.

The glucoside, hesperidin, characteristic of the younger stages, is dissolved in the cell sap in quantities varying with the age. When the fruits have a diameter of from 5 to 15 mm. this constituent reaches its maximum amount, about 10 percent. It is most abundant in the parenchyma of the wall of the fruit and in the central, columnar mass of tissue. As maturity approaches, the amount of hesperidin diminishes. Tannin behaves in the reverse manner, being more abundant in the ripe fruit than in the younger stages.

The fleshy pulp of the fruit is made up of long, clavate structures containing the characteristic juices. These structures (*Zotten*) arise as conical projections from the epidermal and subepidermal tissues of the chambers of the ovary and already exist in a rudimentary condition at the time of blooming. Each of these clavate projections consists of an outer tissue of tangentially elongated, thickened elements enclosing polygonal cells with extremely thin walls. When the *Zotten* nearly fill the chambers of the growing fruit, the transitory starch present in the cells is changed to some sugar capable of reducing Fehling's solution, probably dextrose. At the same time the *Zotten* become turgid with juices.

Other points of interest are revealed which the reader must seek in the original.

[Arch. d. Pharm., 235, p. 19. Complete work as Inaugural Dissertation, Bruns, Minden, 1896.]

Asa foetida.

In his twenty-fourth report on the Examination of secretions Prof. Tschirch summarizes the work by J. Polásek on this oleoresin. Although the volatile oil is included in the assay, a special study was made of the resin. The assay of the pure tears of *asa foetida amygdoloides* yielded the following results:—

Resin soluble in ether (ferulic acid ester of asaresinotannol)	61.40 p. c.
Resin insoluble in ether (free asaresinotannol)	0.60 "
Gum	25.10 "
Volatile oil	6.70 "
Vanillin	0.06 "
Free ferulic acid	1.28 "
Moisture	2.38 "
Residue (impurities)	2.50 "
	100.00 p. c.

Asaresinotannol has the formula $C_{24}H_{34}O_5$. A benzoyl and an acetyl derivative were prepared, consequently the presence of one hydroxy group is assumed. Upon hydrolysis with sulphuric acid, umbelliferone is obtained as a secondary product. When ferulic acid is heated with resorcin and 55 p. c. sulphuric acid in sealed tubes, umbelliferone is obtained synthetically together with guaiacol. Upon nitrification the resin alcohol yielded picric acid. [Arch. f. Pharm. 235, p. 125.]

Blood and Chlorophyll.

A. Tschirch has studied the optical properties of the pure coloring matters of chlorophyll and blood by a very interesting method and has obtained striking results. The spectra of the chemically pure coloring matters were photographed with the quartz spectrograph.

The essential results obtained were as follows: The yellow constituent of the pigments of leaves, the xanthophyll of many authors, is a mixture of xanthocarotin, which in solution shows three absorption bands in the violet and xanthophyll, in its narrower meaning, which in solution shows no bands and absorbs only ultraviolet. Both are free from nitrogen and are crystallizable.

The green pigment, chlorophyll, is probably a paired compound of phyllocyanic acid and an unknown colorless substance. Phyllocyanic acid contains nitrogen and probably in the pyrrol ring. The examination of the spectra of these constituents and of their compounds in comparison with the coloring matters of the blood leads the author to the conclusion that we are justified in assuming that in the substances of the chlorophyll group of coloring matters and in those giving color to the blood, one and the same grouping of atoms is present. Since the absorption in the violet is constant for both classes within narrow limits, this grouping of atoms possesses a considerable stability and therefore contains the same nucleus. He further assumes that this nucleus present in both is the pyrrol ring. This near relation between the two biologically most important coloring matters, in view of the rôles they play, is exceedingly suggestive.

[Photogr. Mittheilungen, 1896, Heft 24.]

Comparative Structure of Fern Rhizomes.

Dr. Walter Laurén has studied the anatomy of the rhizomes of *Aspidium Filix mas* and other ferns liable to be confused with it. He regards the number of vascular strands of the leaf stalks, a characteristic on which classifications have frequently been based, to be of doubtful value for this purpose. Microscopic study showed the presence of the internal glandular structures which secrete the medicinally active principles in *Aspidium Filix mas, A. rigidum, A. spinulosum, A. dilatatum* and *A. crystatum.* These glands are lacking in *Athyrium Filix fœmina, Aspidium montanum* and *A. lobatum.* In the latter group, intercellular spaces in the fundamental tissue are also lacking.

The secretion appears between the cuticle and the wall of the cell proper, as in the epidermal glands of the Labiates and Composites.

The author describes in detail the form and structure of the chaffy scales found in the above named species. Dr. Laurén has prepared a key for the ready separation of these species which uses these scale characteristics.

I. Chaffy scales without glands (or, if present, only two at the base of the scale).
  - A. Margin of scales entire, *Athyrium Filix fœmina.*
  - B. Margin of scales with long, simple, pointed teeth, *Aspidium Filix mas.*
  - C. Margin of scales exceedingly irregular throughout from large number of teeth present, *Aspidium lobatum.*

II. Chaffy scales with glands.
  - A. Margins with pointed teeth, *Aspidium rigidum.*
  - B. Margins entire,
    - a) Glandular trichomes uniform, unicellular, at margin only, *Aspidium crystatum, A. spinulosum, A. dilatatum.*
    - b) Glandular trichomes of two types: short, unicellular, and large, long pedicelled; both at margins and faces of scales, *Aspidium montanum.*

[Schweiz. Wochenschr. f. Chem. u. Pharm. 1896, No. 48.]

Calcium Oxalate as a Reserve Product.

In order to test the truth of the usual statement of the text-books that calcium oxalate crystals represent an excretion product of the plant metabolism and are, therefore, of no further use in the plant, Dr. G. Kraus made a series of quantitive chemical analyses of plants under various conditions. He obtained the salt in the purest possible condition and titrated with chamaeleon.

To test the conduct of the calcium oxalate of roots during the production of shoots, analyses of *Rumex obtusifolius* were made early in the spring, Apr. 28, when the leaves formed a rosette on the ground, and again on May 21, when the tall flower stems were developed. No striking difference in the amount of oxalate found was to be noticed.

In order to ascertain in how far the calcium supply of the soil influences the conduct of the calcium oxalate in the plants, roots of the same species were transplanted into two kinds of soil, one of sand carefully freed from all traces of calcium, the other of sand liberally mixed with particles of a calcium salt. Both were placed in the dark to develop, thus securing the maximum destructive metabolism and, therefore, the maximum demand for reserves. After two months analyses were made, the oxalate content of the roots in the Ca-containing soil having suffered no loss, the roots grown in the sand on the other hand showed a large loss.

The author concludes that here the oxalate was drawn upon to supply calcium necessary to the development of the aerial parts. He also concludes than in normal vegetative processes, according to the needs of the plant, this compound is dissolved and used.

The study of the action of calcium oxalate in barks was preceded by a number of preliminary analyses which shed light upon this constituent. The analyses of whole barks gave the following results calculated in percent of dry weight.

Apple stems, 1½ cm. thick, October	3.88 %
Ash " 2 " " November	1.06 "
Horsechestnut branches, 10–12 cm. thick, Nov.	4.44 "
" trunk, 45 cm. thick, August	10.02 "
Elm " 35 " " "	14.64 "
Guaiac bark, purchased, Gehe & Co	18.90 "
Quillaia " " " "	21.40 "
Pomegranate bark, commercial	36.64 "

The distribution of the oxalate in thick trunk-barks was as follows:

Horsechestnut bark, September.

Outer bark, 10.10%; inner bark, 12.60%.

Oak bark, stem 30 cm. thick, autumn.

Outer cortex, 4.96%; middle cortex, 7.23%; inner cortex, 8.09%; bast, 11.03%.

Linden bark, 95 year old stem, winter.

Outer cortex, 5.60%; inner cortex, 11.92%; bast, 12.24%.

Pomegranate bark, various ages, autumn.

Twigs, ½ cm. thick, 5.54%; twigs, 1½ cm. thick, 12.03%; twigs, 2—3 cm. thick, 18.34%; trunk, 8.5 cm. thick, 42.12%.

As a result of analyses made at different periods of the growing season, Dr. Krans came to the conclusion that during the time of the development of the buds, the calcium oxalate content of the bark undergoes a marked decrease. The amount of loss resulting from the spring development ranged between 12 and 42 percent. This fact is accepted as evidence that the salt is made use of during time of great activity seen in the spring.

The solubility of calcium oxalate in various plant acids was tested and found to take place in appreciable quantity in concentrations varying from $\frac{1}{10}$ to $\frac{1}{1000}$ percent. Crystals after this treatment presented a corroded aspect.

The author regards the sap stream passing from the roots upward through the stem as the dissolving medium and sees in the large calcium content often observed in the sap of trees a confirmation of this view.

[Flora, 83, No. 1, p. 54.]

Camphor Production in China.

Since the cession of the island of Formosa to Japan and the consequent concentration of the camphor production in the hands of the Japanese, other possible sources for this drug are desirable to restrain Japanese monopolistic tendencies.

China seems now to offer the most promising field. Although the camphor tree, *Cinnamomum camphora*, has been long known to the Chinese, it has been until only a recent date regarded solely as the source of a valuable timber. In 1885, camphor was known on the Chinese mainland as an article of commerce in but a single province, Chekrang. A few exportations only were, however, made from this region. In 1895, however, the exportation of considerable quantities from the provinces of Fukien and Kwangsi was made through several seaports. The total export for that year from the Chinese mainland was 1756 piculs (1 picul = 60.48 kilograms). The Chinese camphor production promises at present to develop into considerable importance.

[Pharm. Journ., 1897, p. 201.]

New Remedies.

Hydrargyroseptol.

This new antiseptic is also prepared by the above manufacturers. It dissolves in water forming a slimy, odorless mass, not unlike yolk of egg in appearance. Chemically it is a combination of quinosol mercury with sodium chloride, its composition being $C_9H_5N.O.SO_3Hg.+_2NaCl$.

Methaethyl.

This new local anæsthetic reported upon on page 76 of this year's Review, consists according to an examination by Dr. G. Henning largely of ethyl chloride with small quantities of methyl chloride and chloroform. The boiling point of this liquid was found to be 10.5°; its congealing point, — 30°. Its specific gravity is 0.9173 at 4°. Treated with alkalies, methaethyl is slowly decomposed into alcohol, hydrochloric acid and formic acid. [Pharm. Zeit., 1897, p. 200.]

Argentol.

Argentol, a new antiseptic, has recently been brought upon the market by Franz Fritsche & Co. It is a combination of silver with oxyquinoline and is intended to replace silver lactate and citrate, over which it is claimed to have the advantage of lesser stability, easily breaking up in the presence of septic matter into the strongly antiseptic oxyquinoline and metallic silver, which latter itself, according to Credé's experiments, has a great healing effect. Since the preparation is a non-irritating, non-poisonous, difficultly soluble powder, it is especially adapted to replace iodoform and other silver preparations, which upon decomposition separate out silver oxide.

According to the manufacturers, argentol has the composition $C_9H_5N.OH.SO_3Ag$. It can be applied as a dusting powder, made up into ointments with vaselin or lanolin, or used as an injection in gonorrhoea made up into an emulsion, 1:1000—3000.

[Pharm. Zeit., 1897, p. 174.]

Holocaine.

This is recommended by Dr. G. Gutman (D. Med. Wochenschrift, 1897, 11) as a substitute for cocaine in ocular surgery. Concerning its chemical nature Dr. Tauber (l. c.) writes: Holocaine is p.—diethoxyethenyldiphenylamidine. By combining molecular quantities of phenacetine and p.—phenetidine, holocaine is formed, water separating out:

$$OC_2H_5.C_6H_4NHCO.CH_3+H_2N.C_6H_4.O.C_2H_5=$$
$$OC_2H_5.C_6H_4NHC.CH_3.N.C_6H_4.O.C_2H_5+H_2O.$$

Holocaine is a strong base, insoluble in water, forming beautiful crystals which melt at 120°; its crystalline

salts are also difficultly soluble in water. The hydrochlorie acid salt forms white needles whieh are readily soluble in boiling water. The aqueous solution is slightly bitter, neutral in reaction and is not changed by boiling. If the boiling is conducted in vessels of poor glass instead of porcelain, a slight turbidity sometimes occurs due to the liberation of some insoluble free base by the alkali of the glass. The solution of holocaine hydrochlorate is quite permanent, a 1% solution having been kept for months in an open vessel without signs of decomposition. The preparation is manufaetured by the Farbwerken vorm. Meister Lueius & Brüning in Höehst a. M.

[Pharm. Zeit., 1897, p. 192.]

A Tasteless Quinine Compound.

Quinine ehlorearbonicester ($O.Cl.CO.C_{20}H_{23}N_2O_2$.], is said to have the advantage over quinine of being free from bitter taste, while dissolving with sufficient rapidity in the stomaeh to insure prompt absorption. Aeeording to the D. R. P. No. 90,848 of the Vereinigten Chininfabriken Zimmer & Co. in Frankfurt a. M., this preparation is manufactured by allowing phogène, either as a gas or dissolved in benzol tolnol, etc. to aet upon anhydrous quinine, either dry, or dissolved, or suspended in a proper medium. The erystalline mass so formed is washed with benzol and then digested with water to remove the quinine hydrochlorate which is also formed. Quinine ehlorearbonicester erystallizes from alcohol in fine eolorless needles, m. p. 187—188°; it is less basic than quinine and gives in solutions the thalleioquine reaetion.

[Pharm. Zeit., 1897, p. 192.]

Peronin, a New Narcotic.

Peronin, which was reeently brought upon the market by Merek and gives promise of extensive use, is the hydrochlorie acid salt of morphine benzylester, produeed by replacing the hydrogen of the hydroxyl group in morphine, which is analogous to the phenol-hydroxyl group, with the alcohol radical ($C_6H_5CH_2$).

It has proved itself a good nareotie, somewhat weaker than morphine, but showing the disagreeable properties of this alkaloid in a much smaller degree. Schröder (Ther. Monatsh., Jan. '97), who has tried the effect of peronin on several persons, ranks it with regard to its therapeutie properties, intermediate between morphine and eodeine. It is elaimed to be preferable to the latter in that it produces a sounder sleep and eauses no excitement.

Peronin ($C_{17}H_{18}NO_2.O.C_6H_5CH_2HCl$) forms a voluminous, white powder, eonsisting of very fine long prismatic erystals. Upon heating above 200°, or upon rapid heating even below this temperature, it is decomposed, giving off fumes of a pleasant, benzoin-like odor. At 15° it dissolves in water in the proportion of 7.5:1000, but dissolves readily in 10 p. of boiling water, the aqueous solutions having a bitter taste and being nentral to litmus. It is further soluble in 218 p. of 95 p. c. alcohol, in 100 p. methyl alcohol, and in 390 p. chloroform. In acetone, ether and amyl alcohol as well as in dilute mineral acids it is practieally insoluble.

Although preeipitated from its solutions by the general alkaloidal reagents, peronin differs not only in its solubilities, but also in its behavior toward special reagents, from morphine and codeine. Thus it yields, when heated with eoneentrated sulphuric aeid, brownish-red, red, and finally dark red solutions, while codeine and morphine remain colorless nnder like eonditions. Again, peronin does not produce a blue eoloration with a solution of ferric ehloride and potassium ferrieyanide, nor does it liberate iodine from solutions of potassium iodate in very dilute aeetic acid, even upon warming (difference from morphine). In coneentrated sulphurie aeid containing a little ferrie chloride, peronin dissolves to a brownish-red solution (difference from eodeine, which dissolves in this reagent with a blue or violet color). [Dr. Aug. Sehneegans in Jour. der Pharm., Vol. 24, p. 59.]

An Alum Water from Lee Co., Va.

This water is from a spring on the farm of Dr. J. E. Browning, 9 miles northwest of Jonesville, Lee Co., Va., and was analyzed by L. E. Smoot. It is odorless, eolorless, with a decided acid reaetion and strong alum taste. Temperature at spring, 70° F. Upon analysis it is found to eontain in 1 liter:

	Gram.
Aluminia	0.891
Ferric oxide	0.120
Soda (and traee potash)	0.060
Sulphuric oxide	2.530
Nitric aeid	0.006
Silica	0.108
	3.715

From which we caleulate. One pint eontains

	Grams.
Aluminium sulphate	21.805
Ferric sulphate	2.190
Sodium sulphate	1.015
Sulphuric acid, free	1.598
Nitric acid	0.050
Siliea	0.788
	27.446

This peculiarly large amount of aluminium sulphate seems worthy of note. This water is about twiee the strength of the strongest alum water of Stribling Springs, Augusta Co., Va., which in other respects it much resembles. [Am. Chem. Journ. 19, p. 234.]

Soda Tablets with Loretin.

The iodoform substitute, loretin, cannot only be used on the living organism but can also be employed as a disinfeetant for surgieal instruments. Whereas iodoform eannot be used for this purpose, loretin ean be brought into aqueous solution by means of sodium carbonate. If loretin is mixed with sodium earbonate and eompressed into the form of tablets, a convenient form results in which this disinfeetant can be applied to surgieal instruments as well as to the disinfeetion of the hands, ete. The chemical factory in Helfenberg, near Dresden, has introdueed such tablets which dissolve in a liter of hot water forming a light yellow solution which acts as a germicide.

[Pharm. Centrh. 38, p. 234.]

Literary.

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Wm. R. Warner & Co., — Philadelphia. Warner's Pocket Medical Dictionary of To-Day. Comprising pronunciation and definition of 10,000 essential words and terms used in medicine and associated sciences. One vol., pp. 338. 1897. 0.75.

* Not for sale. Copies, however, can be had from the chairman, Dr. Chas. Rice, by sending 7 cents in postage for carriage.

Author — Chicago. Viola tricolor L., in morphologischer, anatomischer und biologischer Beziehung. Inaugural Dessertation zur Erlangung der Doctorwürde b. d. h. phil. Facultät d. Univ. Marburg, eingereicht von Henry Kraemer.

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A. Tschirch — Bern. Beiträge zur Kenntniss der Entwickelungsgeschichte der Früchte von *Citrus vulgaris* Risso und anderer Citrusarten. Inaugural-Dissertation zur Erlangung der philosophischen Doktorwürde, vorgelegt der hohen philosophischen Fakultät der Universität Bern von Max Biermann, Apotheker aus Buende i. W. Brochure, pp. 52, with two lithographic plates.

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——Das pharmaceutische Institut der Universität Bern. Von Prof. Dr. A. Tschirch. Pamphlet, pp. 8, with photographic view and plan.

——Untersuchungen reiner Blattfarbstoffe mit dem Quarzspektrographen. Beziehungen des Chlorophylls zum Blut. Von Prof. Dr. A. Tschirch. Sonder-Abdruck aus Photogr. Mittheilungen 1896, Heft 24. Leaflet, pp. 3.

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21. Ueber das Dammarharz. Von G. Glimman. Pamphlet, pp. 5.
22. Ueber die Früchte von Myroxylon Pareiræ und den weissen Perubalsam. Von H. Germann. Pamphlet, pp. 7.
23. Ueber das gelbe und rote Xanthorrhœa-(Acaroid-) Harz. Von K. Hildebrand. Pamphlet, pp. 10.
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Reviews.

In Nacht und Eis. Die norwegische Polarexpedition 1893–1896. Von Fridtjof Nansen. Mit einem Beitrag von Capitain Sverdrup. 2 vols, pp. 1034, with 207 illustrations, 8 chromos and 4 maps. Publ. by F. A. Brockhaus in Leipzig. 1897. $6.20.

The dreadful glacial wilderness of the polar regions of the globe seems to have exercised a strange fascination on sea-faring men at all times, and especially the present century has witnessed a number of expeditions for the exploration of the unknown polar seas. In consequence, these have become better known little by little, while the geographical north-pole has been approached within nearly 50 sea-miles by the Norwegian explorer Dr. Fridtjof Nansen in 1895.

After the unfortunate expedition of Sir John Franklin in 1845, wherein the two ships "Erebus" and "Terror" and all on board perished, had disappeared, governments and private persons for the next ten years sent out a number of expeditions in search of Franklin until Mac Clintock in 1857 ascertained the fact that the Franklin expedition had perished and that Sir Franklin had died in June 1847. Among more recent north-pole expeditions there have also been two American ones, one under Lieut. Greely from 1881 to 1884 and another under Capt. Peary in 1892. All these expeditions, although unsuccessfull in so far as they prematurely became stuck in the polar ice, contributed more or less to enlarge our knowledge about the physical geography and the deep-water currents of the polar seas.

Fridtjof Nansen, born in 1861 in the neighborhood of Christiania in Norway, had accomplished several expeditions into the polar region, in 1888; he had crossed the immense fields of drifting ice, reaching as far as Greenland and crossing this large island. This unusually daring accomplishment and his evident knowledge of and familiarity with the scientific and practical conditions requisite for arctic researches and explorations, as well as his theories about the arctic deep-water currents, laid before the Royal geographical society of London in 1891, induced the Norwegian government and a number of admirers of the daring explorer to enable him to fit out an exploring expedition, so as to give him a chance to demonstrate the correctness of his theory that it would be possible to approach the north-pole by entrusting his ship to the polar current drifting in the immense icy world of the polar region from the New Siberian islands towards the north-pole and beyond to the northern Atlantic seas along the shores of Greenland. Nansen had a ship, the "Fram", constructed and built according to his design, so that it would withstand the tremendons ice-pressure exerted during the enormous low temperatures during the winter months. He started with twelve selected companions on June 20, 1893, from the northernmost port of Norway. For three years no news was heard of the expedition and the opinion more and more prevailed that the "Fram" might have met with the same fate as the ship "Javette" of the Bennett (New York) expedition, which in 1879 had been crushed by ice-pressure. The more gratifying, therefore, was the news received in August 1896 of the safe return of Nansen and one week later of the ship "Fram" also. Nansen and Lieutenant Johansen had left the "Fram" in March 1895 on snowshoes with two boats on sledges with a number of polar dogs with a view to crossing the tremendous icy wilderness toward the pole. They succeeded in passing northward up to the latitude of 86° 13′ 36″, or nearly 50 geographical miles toward the north-pole, the lowest temperature they experienced being —41.7°. They then turned southward reaching Franz Josephland in June 1896, where they met near Cape Flora the English explorer Captain Jackson and his steamer "Windward". On August 7th the "Windward" started toward Norway with the two explorers, landing on August 13th at the port of Vardœ in northern Norway. One week later the news of the safe return of the "Fram" at the Norwegian port of Skarvœ was received. The Nansen-expedition had thus, after an absence of more than three years, safely returned without the loss of a single man and with most important results, particularly in regard to the prevailing deep-water currents of the northern polar regions, as well as to the discovery that the polar seas surrounding the geographical north-pole of the globe are not, as hitherto supposed, a shallow water with many islands, but a very deep basin reaching over the entire polar region. The immense ice masses covering these seas seem to be in constant motion from the Beringsstrait and from the coasts of Siberia across the great polar basin towards the north Atlantic ocean along the coasts of Greenland.

Dr. Nansen has described his and his companion's expedition, lasting for more than three years, in this work just published under the title "In Night and Ice". A master among modern explorers, he has also proved by this book his mastership both as a scientist and as a fascinating writer. His book meets the keenest anticipations in every respect and will be a delightful and instructive reading in all countries. It needs no further introduction, finding unprecedented interest and demand. The excellent maps, chromos and reproductions of the original photos of Dr. Nansen greatly enhance the instructiveness and the value of the work.

Upon the invitation extended to Dr. Nansen from learned societies from all countries, he has just returned from triumphant visits to Berlin, London and Paris; his next visit will be to the United States this fall, where he undoubtedly will meet with an appreciative and warm reception.

Fr. Hoffmann.

The Year-Book of Treatment for 1897. A Critical Review for Practitioners of Medicine and Surgery. Lea Brothers & Co., Philadelphia and New York.

The busy practitioner of the present day finds in such annuals as this many helps which he might overlook; and it is often the case that if it were not for such books as this, which give in a concise manner the points gleaned from the literature of the year by men especially interested in each department of medicine, he would miss many of the advanced ideas.

This annual is, as one can see from the list of contributors, of British origin. But as one looks through the book it is immediately noticed that no contributor has confined himself exclusively to British literature for his facts; for we often find

abstracts from German, French and American periodicals following each other on the same page.

The article on Orthopædic Surgery is followed by a short "Bibliography" which gives the titles and publishers of the principle books in that department of Surgery. This is an excellent feature, and should have been made use of by each contributor.

It is needless to discuss the merits of each department. Although "Brown-Séquards so-called 'Elixir of Life' followed its inventor to a common grave; and the disease of old age, to which all mankind is liable, is still considered incurable;" still it is pleasing to find mention of the good results obtained by the use of the extract of the thyroid gland, *thyroidin*, and of the pancreas, *pancreatin*; the former in goitre and the latter in diabetes.

Although no mention is made of it, it may be well to state that thyroidin has produced exceedingly good results in the treatment of myxœdema.

Altogether the book is one which can be read with profit by the class of physicians for whom it is designed and deserves the success which it has had in the past. *W. S. Miller.*

Das letzte Aufflackern der Alchemie in Deutschland vor 100 Jahren. (Die Hermetische Gesellschaft 1796—1819.) Ein Beitrag zur deutschen Kulturgeschichte von Ernst Schultze in Berlin. Verlag von Gg. Freund, Leipzig. Pamphlet, pp. 44. 1897. M. 1.80.

On Saturday, October 8, 1796 there appeared in the Reichsanzeiger, one of the most popular German papers, an article under the title Higher Chemistry, and signed The Hermetic Society. The author states that chemistry had assumed such form that it could appreciate the axioms and fundamental principles of alchemy, that many thousand heads and hands in Germany were busy with the study and solution of alchemistic problems, that there was alchemy and alchemy, and that a society of unselfish alchemistic students had been organized to promote true alchemy by cooperation.

This communication created a great sensation and letters were received from men of high standing in politics, society and the professions, also from the humblest persons, ignorant and almost illiterate. The manner in which this correspondence seems to have been utilized would have done credit to a modern sensation paper. A reaction, however, set in and discontent on part of many of the unsatisfied correspondents seems to have caused the Reichsanzeiger to withdraw. The society, nevertheless, continued to exist and made several attempts at publishing its own journal.

If the sharks and fools had been busy writing, the enemies of alchemy were not altogether quiet. The same journal contains a communication by Wiegleb in which he denounces and ridicules the Hermetic Society. One sentence may be quoted: "Statt aller dadurch Verunglückten mag Bernhard Perrot auftreten und sein letztes Urtheil davon sagen, das also lautet: Wer jemanden uebel will, aber sich nicht erkuehnen, ihn oeffentlich anzugreifen, der veranlasse nur, dass er auf Goldmacherey verfalle."

People at that time asked, and we may inquire: who constituted this Hermetic Society? Its members are readily enumerated:— Kortum, a physician and the author of the well known Jobsiade, and Baehrens, a theologian. Kortum was a close student of alchemistic writings and possessed a considerable library of alchemistic books and manuscripts. He was known as a writer on alchemistic subjects though not himself an experimenter. Baehrens, on the other hand, knew very little about alchemy, but experimented. Baehrens had written to Kortum for information and thus began a correspondence of extreme interest. This correspondence began in 1795. In the following year Baehrens suggested to Kortum to discuss the subject of their correspondence in the Reichsanzeiger. Kortum at first hesitated, but yielded later, stating that if no good came out of the publication the expected communications might at least afford some amusement. Baehrens, however, who was the schemer hoped that valuable information might thus be obtained. By making people believe that they had discovered the true *materia prima*, others, in the hope of receiving valuable information, might disclose such. Honorary membership was also held out as inducement. Whereas Kortum largely supplied the alchemistic essays and correspondence, Baehrens was the motive power, using Kortum and others as his tools.

As might be expected, the sensation gradually lost its charm for the multitude and the few faithful ones gradually became more and more discouraged, Baehrens being the only one who obtained any benefit in the way of honors and appointments.

The pamphlet is replete with interest from beginning to the end. It is truly a contribution to the history of civilization. On the last pages the author speculates somewhat as to the condition of human society that should have made such a chapter in our history of the past hundred years possible. He is of the opinion that to us it must appear ridiculous that a society could keep up such a farce for several years in one of the most prominent newspapers of Germany. The same motives that underlay most of the letters published and unpublished, the desire for wealth and longevity, make possible year in year out in this country the daily publication all over the country of the most absurd statements and barefaced lies that the world has ever witnessed. Hundreds or thousands of dollars if not millions are annually spent in advertising secret preparations, so-called patent medicines, and the duped public spends twice and three times as much in the blind chase after the life-giving elixir. The following stanza from the Jobsiade, written by Kortum while he was greatly interested in the Hermetic Society, clearly shows what opinion he held of this class of people.

"Sein Praeservans contra alle Krankheiten
Bestand aus Honig und einigen Kleinigkeiten;
Und etwas Eichenrinde mit Fliedermus war
Das Koenigliche Restauratio Electuar."

E. K.

Bericht über die Pharmacognotische Litteratur aller Länder. Herausgegeben von der deutschen pharmaceutischen Gesellschaft. Bericht für 1896. Theil II.

In the second part of the report issued by the commission placed in charge of this work, we find in a collected form, the essential results of a large number of investigations. The hope was expressed

when the first part appeared that, if the publication of such a report was undertaken, it should be made as complete as possible. Completeness in even a moderate degree could hardly be predicated of Part I and, it must be said with regret, Part II shows no evident improvement in this respect. The Bericht thus far fails to be "eine Centralstelle für die fortlaufende Berichterstattung über sämtliche Arbeiten welche die botanische, chemische und pharmacologische Erforschung der Heil- und Giftpflanzen aller Länder betreffen",* and fails to reach the mark set for it not only by our hopes and expectations but also by the body fathering it.

Selected articles have been abstracted but importance of content does not seem to have been the characteristic required to give admittance. A comparison of the titles of contributions donated to this commission and acknowledged from time to time in the numbers of the Bericht proper with the titles of articles abstracted, fails to show any close connection here. On what basis selection was made is not apparent.

Owing probably to the fact that the work of preparing abstracts is in the hands of several workers without, as yet, a well defined common policy, some articles are printed well nigh entire and occupy space out of proportion to their significance, e. g., East Indian drugs described in Gehe & Co.'s Bericht, Sept., 1896.

All criticism aside, the work as it stands has a value not to be underrated and it will doubtless become as it is almost a necessity. When a work of this kind is being done, however, it is very much to be regretted that it fails to enter a still larger field of usefulness. *Rodney H. True.*

Die Fabrikation der künstlichen Mineralwässer und anderer moussirender Getränke von Dr. B. Hirsch in Dresden und Dr. P. Siedler, technischer Leiter der Dr. Struve und Soltmann'schen Mineralwasserfabrik in Berlin. Ein Bd., pp. XII, 393, mit 103 eingedruckten Abbildungen. Dritte, neu bearbeitete Auflage. Druck und Verlag von Friedrich Vieweg und Sohn, Braunschweig. 1897. M. 8.00.

The artificial preparation of mineral waters was attempted by the ancients in an empirical manner. It was first placed on a somewhat scientific basis after the attempts of Thurneisser to analyse natural waters. These analytical methods, however, did not assume a practical form until after the discovery of the fixed alkalies and of carbonic acid by van Helmont in the 17. century. This enabled Friedr. Hoffmann (about 1700) and Venel (1755) to proceed to a rational method of preparation. In these early attempts the carbonic acid was generated in the flask. In 1767 Beroley showed that the gas could be generated in one flask and passed into another. This method was improved by Priestley (1772), Lavoisier (1773) and others.

Since then the mineral water industry has developed rapidly and especially in the second half of this century. The first edition of this monograph was published in 1870, the second sixteen years later. The present edition, which was largely rewritten, is divided into the following chapters: Mineral waters in general; "half natural" mineral waters; artificial mineral waters; ingredients; apparatus; preparation; recalculation of analyses; artificial medical mineral waters which do not occur in nature; examination of artificial waters; effervescent beverages; laws, ordinances, legal decisions etc.

The definition or definitions of a "mineral water" quoted by the authors have a scientific air about them, yet they are less in accord with what might be termed the actual facts than the definition given in one of the special U. S. census bulletins for 1890, in which all marketable waters are classified as "mineral waters". Certainly no scientific or any other tribunal could give a satisfactory or logical classification of natural waters on any other basis. It certainly seems undeniable that the "discovery" of mineral springs increases with the advance of civilization of a country.

In spite of the fact that the horizon of the authors was evidently limited largely by the boundary of their country, the American mineral water manufacturer and even the pharmacist will find much in this book than can be made practically useful. Good working formulas of the most important springs of medicinal repute are alone of no small value. The supply merely of a water that is free from contamination and agreeable to the taste would prove a matter of greater credit to the druggist than the various favors which most druggists shower upon their customers in order to attract trade. The question of pure water supply is not only a perplexing one in large cities, but is vital everywhere. Especially is this true where river- and ice-water afford the only drinking water on account of the alkalinity etc. of the wells.

The book-work is of the usual excellence characteristic of the firm. The monograph, for more than one reason, should find a place in the library of every well regulated pharmacy. *E. K.*

Anleitung zur mikrochemischen Analyse der wichtigsten organischen Verbindungen. Von H. Behrens, Professor an der Polytechnischen Schule zu Delft. Viertes Heft. (Karbamide und Karbonsäuren). Brochure, pp. 129, mit 94 Figuren im Text. Verlag von Leopold Voss, Hamburg und Leipzig. 1897. M. 4.50.

Fascicle one of this interesting and valuable work including the anthracene group, the phenoles, quinones, ketones and aldehydes appeared late in 1895. Part two dealing with the more important fibres, and part three containing the aromatic amines appeared in 1896. These parts were duly reviewed in the columns of this journal last year. The fourth installment, including the carbamines and organic acids, now lies before us. After what has already been stated about the general character of the work, little need be said here, whereas the title page itself sufficiently indicates the contents.

Some chemists are of the opinion that microchemical methods cannot be recommended too urgently, because very small quantities of material as a rule suffice in the hands of the expert to obtain positive results, and because a microscope with appliances and a few test tubes are about the only tubes necessary for such work. The facts, however, are that the chemist as a rule has larger quantities at his disposal and consequently prefers to make macroscopic tests and reserves microscopic

* Bericht d. deutsch. pharm. Gesellsch., 6, p. 5.

methods for supplementary tests and to instances in which his material is exceedingly limited.

Attention has been called to another fact and this is probably more important, viz., that microscopic chemical analysis must be of great didactic value. It of necessity teaches the student to manipulate with exceeding care and would therefore tend to correct the slovenly habits often acquired in ordinary chemical analysis. This argument is a very good one and teachers of chemistry should heed it. Incidentally, in this connection, it may be of interest to call attention to the identification of caffeine and theobromine (p. 15). The crude alkaloid obtained by extraction is sublimed. The crude caffeine corresponding to 1 mgr. of tea e. g. is said to yield several sublimations each sufficient for microscopic examination. *E. K.*

Nouveau Formulaire magistral, par les Drs. A. Bouchardat, ancien professeur à la Faculté de Médicine de Paris, et G. Bouchardat, professeur à l'Ecole de Pharmacie de Paris, membre de l'Académie de Médicine, 31e edition. 1 volume in—18 de 690 pages, broché 3 fr. 50, cartonné à l'anglaise, 4 fr. Félix Alcan, éditeur.

The editions of this book succeed each other at short intervals as the new discoveries in medicine render revisions necessary. The volume, though concise, is very comprehensive, the 31st edition containing a description of Parisian hospitals, numerous tables of weights, measures, doses, etc., a brief outline of urinary analysis, a compendium of substances employed in medicine giving uses and modes of administration, a list of European mineral waters and their composition, an article on antidotes and treatment in cases of poisoning and asphyxia, an excellent chapter on hygiene, together with an enumeration of foods for diabetic patients.

The general remarks on pharmaceutical preparations are too brief to be of much value, but the lists of preparations given under each remedy are remarkably complete. Among the remedies added in this revision are trional, the preparations of menthol, of resorcine, of ichthyol, of piperazine and its homologues, the glycero-phosphates of lime, soda and iron, the thyroid gland preparations, so-called artificial serums for subcutaneous injections, formic aldehyde and its derivatives as antiseptics, etc., etc. Of remedies whose manufacture cannot readily be accomplished in a pharmaceutical laboratory, only the therapeutical applications are mentioned.

Although particularly intended for France, this formulary contains much information that would render it a valuable reference book to any pharmacist or physician in this country.

Richard Fischer.

Viola tricolor L. in morphologischer, anatomischer und biologischer Beziehung. Inaugural Dissertation zur Erlangung der Doctorwürde bei der hohen philosophischen Facultät der Universität Marburg, eingereicht von Henry Kraemer, aus Chicago, Ill., U. S. A. Marburg, Universitäts-Druckerei von Joh. Aug. Koch. 1897.

Introductory to the closer study of the structure of the plant is a chapter treating in a very detailed manner the various allied forms of violets grouping themselves around this species. The significance of various external phenomena in causing the various local differences are discussed in the light of culture experiments. The morphology, developmental history and anatomy are treated very fully with very copious quotations.

Of especial interest, perhaps, is the presence of numerous slime cells in the lamina of the leaf. Certain epidermal elements seem, by the formation of a tangential wall, to have been divided into an epidermis cell proper, the superficial member, and an inner member, which becomes a slime cell. These slime cells are easily found in material preserved in strong alcohol and by proper treatment, they may be readily made out in herbarium specimens. They vary considerably in form. They are by no means confined to the varieties under immediate discussion, having been demonstrated by the author in thirteen other species as well.

Certain other slime bearing structures are present in the form of small, multicellular projections occuring at the tips of the stipular lobes, on the teeth of the leaf and at the tip of each calix lobe. They consist of a rounded, glandular head usually supported on a more or less elongated pedicel. Each gland has its origin in a simple epidermal cell and is formed at a very early stage of the development of the leaf. After completion of development, slime appears beneath the cuticle of the terminal cells. The increase in quantity progresses until the cuticle is ruptured and the slime escapes.

The function of the slime cells is the subject of considerable speculation. By some it is regarded as protective, by others it is looked upon as a water-retaining tissue.

The presence of slime-bearing elements in other genera of the family *Violacæ* was demonstrated. In some members of the genus *Rinorea*, they are questionably present. They were demonstrated in the genera *Anchietea*, *Schweiggeria* and *Hybanthus*. The representative of *Noisettia* examined contained none.

The anatomy and morphology of the various parts of the plant are described in considerable detail. For these and other features, the original paper must be consulted.

Rodney H. True.

Formulaire des médicaments nouveaux pour 1897, par H. Bocquillon-Limousin, pharmacien de 1re class, laureat de l'Ecole de pharmacie de Paris. Introduction par le Dr. Huchard, medecin des hôpitaux. 1 vol. in –18 de 308 pages, cartonné 3 fr. Librairie J. B. Baillière et Fils, Paris.

The seventh edition of this formulary was reviewed in the May number of last year's Review. In this new revision the author has brought the work up to date by adding a large number of articles recently introduced in medicine, not only synthetic preparations, but crude drugs as well. Although most of these remedies are more or less fully reported on in our various pharmaceutical journals, the convenient form in which they can be found in a book of this kind, amply repays the small expenditure entailed in securing a copy.

R. Fischer.

Bericht von Schimmel & Co. (Inhaber Gebr. Fritzsche) in Leipzig. Fabrik äther. Oele, Essenzen und chemischer Präparate. April 1897. Brochure, pp. 127.

The reports of this firm, formerly an annual but since a number of years a semi-annual, are anticipated with considerable interest by chemists, botanists and others who are interested in this class of plant products. Although even the older commercial reports were valuable the fact that to the commercial and technical aspects the more scientific aspect has been added has in late years made these reports all the more valuable and interesting. Besides reviewing the general progress each semi-annual seems to contain something of a more special nature. Thus the April report for this year contains a map of Japan indicating the provinces in which peppermint oil or camphor or both are produced.

In addition to the regular report this number also contains a table of volatile oils giving the botanic source, crude material, yield, physical constants and chemical composition. The table covers 53 pages and includes 277 oils. Those who have had occasion to make use of the table published by these reports in October 1893 will welcome the new revised edition. It is extremely serviceable. If references to the sources of information could be added the table would be even more valuable than it is at present. *E. K.*

Taschenbuch bestbewährter Vorschriften für die gangbarsten Handverkaufs-Artikel der Apotheken und Drogenhandlungen. Von Ph. Mr. Adolf Vomácka. Ein Bd., pp. IV, 122. Zweite, verbesserte Auflage. A. Hartleben's Verlag, Wien. 1897.

This formulary constitutes volume 181 of the Chemisch-technische Bibliothek of the publishers, a series of useful and practical monographs too widely known to require introduction. The formulas are not designed merely for the apothecaries and druggists of Austria, but are intentionally kept as general as possible. They are intended more particularly as a general working basis, from which the druggist can deviate in minor details so as to best meet the demands of his customers. In different countries these will naturally vary. Inasmuch as originality is claimed for most of the formulas, the live pharmacist will be glad to add this small formulary to his list of similar works. *E. K.*

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EDITORIAL.

In a recent number* attention was called to the difference between British and German universities as viewed from the standpoint of an Englishman. The view expressed is in harmony with the general awakening in England, to which attention has been repeatedly called within the past year, that it becomes necessary "to depart from old-fashioned habits" etc. in order to keep abreast with the progress of the times. The same number of the English journal quoted also called attention to the efforts being made to obtain an institute for teaching botany in London. The several botanical gardens in and about London afford excellent opportunities for investigation, especially in systematic botany, but little or no effort seems to have been made to take advantage of these facilities for teaching purposes.

Every person interested in the advancement of science will welcome each and every effort made by our British friends. As pharmacists we rejoice to see that our British confreres are taking an active interest in the present movement. Whatever our estimate of the relative position of English and American pharmacy may be, we can only be benefited by such a movement. We, therefore, do not envy the step that tends to place British pharmacy in a more favorable position, but welcome it knowing fully that it will stimulate Americans to even greater activity.

On this side of the water so-called practical men have supposed that the denunciations which prominent British students have visited upon their own universities for being cramming institutions applied to all institutions of higher and liberal education. What is needed and what is wanted by the British is the free atmosphere of the German universities where the students study e. g. the sciences for the love of science and truth, not merely because they may serve as a means for livelyhood in a certain profession. The very persons in this country who denounced and ridiculed the broad training afforded pharmaceutical students in laboratories of our own universities, took sides with those of our pharmaceutical institutions, in which the major portion of time was spent in attending lectures and cramming for examinations, for these examinations were almost the only criterion by which many a professor could judge his students. It is this kind of work that wide-awake British scholars have criticized for the past fifty years and more. Even the British business man is beginning to feel that there is something in a liberal education that qualifies ultimately even for business. Pharmaceutical education, which cannot for a moment be considered distinct from education in general, can be neither too broad nor too deep. It is well for us in America to have this fact emphasized in England, for those who cannot be convinced by logic will be forced to action by the desire not to be outdone by England. This view of the situation may not be very inspiring, yet it contains some element of encouragement.

The report of Dr. Springfeld, Medical-Assessor with the royal police commission (Polizeipräsidium) of Berlin, contains a number of data that

* April number, Supplement, p. 13.

should constitute a warning to some of those who desire to classify American pharmacists according to the plan in vogue in several European countries.

At the close of the year there were 946 places subject to revision: 25 factories of chemico-pharmaceutical preparations, 286 stores in which poisonous photographic supplies were sold and 635 drug-stores (not Apotheken, but pharmacies of the second class or Drogerien).

Of the drug stores 432 = 69 p. c. were inspected, 150 were controlled by secret purchase and 35 were searched thoroughly.

Of the proprietors of inspected drug stores 279 = 64 p. c. were fined, mostly for the contravention of one paragraph of the law.

The contraventions exposed by secret purchase throw even worse light upon the druggists (Drogisten, not Apotheker), because fines were levied in 71 p. c. of the cases.

The number of "Haussuchungen" was small, but in 97 p. c. of the cases positive results were obtained.

Of the Berlin druggists only 15 p. c. have escaped being fined. In the drug stores 738 persons were employed, of which number 36 p. c. was below 18 years of age.

Dr. Springfeld closes this part of his report with the words: "Für den Apotheker sind diese Ziffern beachtenswerth." They not only deserve the attention of the German apothecary and public, but they should serve as a wholesome warning to those American pharmacists who desire to improve their calling by creating several classes of pharmacists. Wherever this has been tried, it seems to have proved almost an absolute failure. In France they are at present trying to rid themselves partly of this evil by national legislation. In Germany, Austria and elsewhere the evil is such that it not only demoralizes legitimate pharmacy, but almost baffles the enforcement of the laws supposed to regulate those drug stores or pharmacies of the second class. Dr. Springfeld says: "The unconstraint with which the imperial orders are transgressed in Berlin is increasing from year to year. It no longer surprises one that the druggists declared in a meeting of protest that no druggist could any longer make a living without the customary contraventions." Yet to every pharmacy in Berlin there are five drug stores. Let us hope that American pharmacy will not repeat the experiment that has proved a curse to Europe.

"Amerika, das grosse Land, das sollt ihr einmal sehen. Da bleibt 'nem manchen der Verstand vor lauter 'Humbug' stehen." Europeans, and the Germans in particular, are very fond of singing this "Gassenhauer" in all possible versions, and on all possible occasions. Some time ago a German weekly recorded a bit of Scotch news. A country physician is said to make use of several carrier pigeons in cases of emergency. If medicine is needed immediately, he sends home one of his carriers with the prescription and other necessary directions. As soon as the carrier arrives, the servant examines the bird and carries out the written instructions of his master. The physician is also said to be in the habit of leaving one or several carriers with very sick patients, so that the nurse can send a carrier in case of a turn to the worse.

If true, this is a bit of practical genius; if invented, is not a bad story and worthy of a Scotchman. Why the editor of the German paper referred to should consider the story more plausible if it had emanated from America is comprehensible only to those Americans who, while abroad, have read German dailies and have been amused as well as disgusted with the stuff about America, with which the Germans are periodically fed.

Yet the same editor a few weeks later called attention to the fact that the shepherd Heinrich Ast, who has become famous as a disciple of a new branch of the healing art, pays a greater income tax than any other citizen of his district. This certainly does not augur well for the intelligence of the Germans who have the ills to which their flesh is due, diagnosed by an ignorant shepherd, not necessarily by appearing before him in person, but by sending a lock of their precious hair. That some Germans are still willing to be duped even after they have come to this country, became apparent since a brother of "Schäfer Ast" opened a branch office in Milwaukee, from which he sent the necessary locks with the equally necessary fee. The large Milwaukee dailies scarcely took cognizance of this new local industry, but the German pharmaceutical papers, who allott but very little of their precious space to America, heralded the news far and wide throughout the great fatherland. This, however, is perfectly in harmony with the style of German news.

About a year ago an object of historical interest was described in the columns of this journal. A month later it made the rounds in the German pharmaceutical journals as a new remedy. Still better, a New York pharmaceutical journal, published in the German language, copied the nonsense from its European contemporaries. Yet this journal, at about the same time, was heralded in Germany as the only remaining representative of German pharmacy in this country. No one in this country will envy the journal for its reputation.

Is one to conclude that in order to be a true representative of German scientific ideas in America implies the copying of German nonsense about this country? Let us hope not. The Pharmaceutical Review, whether published in the German or English language, has always boldly advocated German ideas wherever they seemed preferable to others. Whether this is done in the German, English or even Russian language should be wholly immaterial.

The time, however, is ripe for Europeans to refuse to be fed with nonsense about America and to get over the notion that all nonsense is necessarily of American origin. Knownothingism in America has lost its ground, because Americans have traveled extensively abroad, and because American newspapers and journals give, on the whole, substantial information about the European countries. European knownothingism about America, however, still seems to be the fashion. The German school teacher may teach his pupils that New York is the capital of the United States, if he considers this country of sufficient importance to constitute a fragment of a chapter in his course of geography or history, but it would be too much to expect him to inform himself about a country that is populated by the criminal and pauper offal of Europe. A Leipzig university professor, while examining an American student, questioned him with regard to a certain animal and remarked: "You certainly know all about this, it is found in your neighborhood, in Mexico, right near Boston." Unless those Europeans, who consider themselves educated and well informed, desire to continue to make themselves ridiculous in the eyes of intelligent Americans, who from residence and travel in Europe are sometimes better informed with regard to European countries than many Europeans, they must demand sound and healthy information from their papers and journals and cease to consider humbug as synonymous with American.

A recent number of a pharmaceutical weekly, printed in the German language, contains the following news item: "Wenn die alten Alchemisten aus dem Jenseits auf unser Jammerthal herabblicken würden, so müssten sie helle Freude empfinden. Denn ihr vielbelachtes, vielbespötteltes Streben und Suchen ist zu neuem Leben erwacht. Die Kunst des Goldmachens, die Transmutation, die Umwandlung der Metalle setzt frische Blüthen an. Man beginnt wieder vom Stein der Weisen zu sprechen, und zwar sind es die praktischen, nüchtern denkenden Amerikaner, welche die Umwandlung der Metalle nicht mehr als blosse Chimäre betrachten. Einige der dortigen Gelehrten, deren Namen in der wissenschaftlichen Welt einen guten Klang haben, behaupten sogar, dass es ihnen bereits gelungen sei, in kleinen Mengen—wenn nicht schon ein beliebiges Metall—so doch Silber in Gold zu verwandeln." The names of several prominent American scientists are then mentioned and we are informed that an Argentaurum Syndicate has been organized. The article concludes with the would-be joke: "Nun, wenn schon kein wirkliches Gold producirt werden kann, so dürfte dieses Argentaurum immerhin geeignet sein, den Actionären die Beruhigung zu gewähren, dass ihr Geld nicht verloren ist."

It ought to be needless to state, as one of the scientists referred to writes, "that there are no facts to justify the article." It is either the grossest ignorance about America and Americans, or it is downright viciousness that inspires such articles. Americans are so accustomed to this that, as a rule, they are inclined to overlook such matters. There are, however, times where silence is no longer a virtue. This is especially true if it becomes known that it is not only ignorance, but apparently dishonesty that underlies a given case.

A year ago a paper was presented to the Am. Med. Assn. at its meeting at Atlanta on the toxic action of certain chemicals, in which it was shown that their toxic action could be explained on the basis of the theory of electrolytic dissociation. Empirical knowledge with regard to these substances was thus placed on a scientific basis, which enabled the prediction of the properties of other similar substances. Several months later a detailed report was made in the Botanical Gazette. Reprints of these articles were sent to a prominent German journal. Yet this very journal a few months thereafter published an article by two German scientists, who had arrived at the same conclusions, without, however, taking the least cognizance of the earlier American investigators. American scientists are accustomed to see their investigations ignored by European, and especially by German scientists, but apparently willful ignorance of this kind should be stigmatized as dishonorable. The same journal has more recently published an abstract of the article sent to it almost a year ago. German supremacy in the scientific world will not last long if it has to be maintained by ignorance and dishonesty.

Those Americans, who have studied at German universities and are fond of cherishing a kindly feeling for the German fatherland of science, keenly regret such distortions based on ignorance and at times apparently on dishonesty. Many of them have succeeded in introducing German ideas into American universities and into American life in general. The successful carrying out of these ideas has redounded to the credit of Germany and German methods. Science, however, is not limited to German soil, and the educated German must learn to look beyond the boundaries of his country.

ORIGINAL CONTRIBUTIONS.

Note on Extemporaneous Chlorine Water.

By Dr. *F. B. Power.*

In the March number of the Review, p. 54, an abstract from the Pharm. Wochenschrift, 14, p. 87, and Bolletino farmaceutico, 1896, was given relating to the extemporaneous preparation of chlorine water. As the abstract in question is very brief, it may, for the purpose of comment, be quoted in its entirety.

"Chlorine water can be extemporized by the action of sulphuric acid on sodium chloride in the presence of minium or litharge with the requisite amount of water. The reaction is expressed by the following equation:

$$3H_2SO_4 + 2NaCl + Pb_2O_3 = 2PbSO_4 + Na_2SO_4 + 3H_2O + Cl_2.$$

Inasmuch as such a preparation contains sodium sulphate, Griggi suggests the use of oxalic acid in place of sulphuric acid, and of calcium chloride for sodium chloride. The resulting calcium and lead oxalates are insoluble:

$$2H_2C_2O_4 + PbO_2 + CaCl_2 = CaC_2O_4 + PbC_2O_4 + 2H_2O + 2Cl."$$

Although these methods and the expression of the reactions intended to illustrate them may seem very plausible, as is indeed evident by their having already been noticed in at least three pharmaceutical journals, they nevertheless embody some peculiar errors to which it may be useful to direct attention.

In the first place the statement that "chlorine water can be extemporized by the action of sulphuric acid on sodium chloride in the presence of minium or litharge" is only partly correct, for although chlorine would be developed by the use of minium or red lead, Pb_3O_4, it could naturally not be developed by the use of litharge, PbO. Moreover, in the above illustration of the reaction neither of these two oxides is employed, but lead sesquioxide, Pb_2O_3, and if this be regarded as a compound of the monoxide PbO, and the dioxide PbO_2, it is the latter and not the former to which the development of chlorine is due.

With the use of minium or red lead, Pb_3O_4, the reaction would take place in the following manner:

$$4H_2SO_4 + 2NaCl + Pb_3O_4 = 3PbSO_4 + Na_2SO_4 + 4H_2O + Cl_2,$$

or with lead peroxide, PbO_2, as follows:

$$2H_2SO_4 + 2NaCl + PbO_2 = PbSO_4 + Na_2SO_4 + 2H_2O + Cl_2.$$

In the latter instance the reaction is evidently quite analogous to that which ensues in the ordinary method of generating chlorine with the use of manganese dioxide, sodium chloride and sulphuric acid, or, indirectly, with the use of manganese dioxide and hydrochloric acid, but while in the latter case heat is required, with lead peroxide the reaction proceeds in the cold.

It is, however, the second reaction in the abstract above quoted which is of particular interest. This refers to the suggestion of Griggi to prepare an extemporaneous chlorine water by the action of oxalic acid on a mixture of lead peroxide and calcium chloride, as indicated by the previously cited equation:

$$2H_2C_2O_4 + PbO_2 + CaCl_2 = CaC_2O_4 + PbC_2O_4 + 2H_2O + Cl_2.$$

It was evidently assumed by Griggi that in this reaction oxalic acid performs the same function as sulphuric acid, but this is by no means the case. If, for example, calcium or barium chloride, lead peroxide and oxalic acid be thoroughly mixed in the above noted molecular proportions by trituration in a mortar, and then the requisite amount of water added, a very vigorous reaction at once ensues. A peculiar odor is developed, which, however, is not that of chlorine, although it might possibly be mistaken for it, but is apparently that of ozone. This is rendered evident by the immediate blue coloration of a strip of paper moistened with a solution of potassium iodide and starch when held over the vessel in which the reaction is taking place. If as soon as the reaction is completed the mixture be transferred to a filter, a quite colorless filtrate is obtained, possessing the peculiar odor above referred to, but which does not liberate iodine from a solution of potassium iodide, or at least not more than a very slight trace, and which therefore does not contain free chlorine. The energetic reaction which takes place when water is brought in contact with the respective mixed substances is due to the evolution of carbon dioxide.

It is probably well known that lead peroxide, although containing relatively a much smaller percentage of oxygen than manganese dioxide, gives up its oxygen much more readily than the latter to oxidizable bodies, especially in the cold. In the case under consideration the oxalic acid is simply oxidized to carbon dioxide and water, and essentially the same reaction takes place when lead peroxide and oxalic acid are brought together in contact with water.

$$H_2C_2O_4 + O = 2CO_2 + H_2O.$$

In order to ascertain whether calcium or barium chloride suffer any change at all when present in this mixture, carefully weighed quantities of barium chloride, lead peroxide and oxalic acid, corresponding to the exact proportions represented by the previously mentioned equation, were brought in contact with a small amount of water, and, after the reaction had ceased, the mixture was brought on a filter and the residue washed with water. The liquid was found to contain 90 percent of the barium chloride employed, while but about 20 percent of the oxalic acid remained. It was thus evident that the barium chloride had remained for the most part undecomposed, a small portion having probably become converted into oxalate, while the greater part of the oxalic acid, as before stated, had become at once oxidized by the lead peroxide to carbon dioxide and water.

It therefore seems probable that the suggestion of Griggi concerning the extemporaneous preparation of chlorine water must have been based upon not very carefully considered theoretical conclusions, as expressed in the equation he has given, rather than upon results obtained by actual observation and experiment. It is, moreover, somewhat questionable whether the use of minium or of lead peroxide presents any great advantage over manganese dioxide for the preparation of even small amounts of chlorine water, especially if it be considered that by such an extemporaneous method as has been suggested the sodium sulphate contained in the solution would be likely in many cases to have a disturbing influence.

London, April 1897.

Some Cuban Medical Plants.*

By *Robert Combs*, Asst. Prof. of Botany, Iowa State College, Ames, Iowa.

Andira inermis Kunth. "Yaba." Native to tropical America. And *Andira microcarpa* Gr. Endemic to Cuba.

The seeds of these two species contain a bitter principle which produces the effects of a powerful emetic, and possesses vermifuge properties. It is dangerous in large doses. The bitter bark, in large doses, is very poisonous, but when used carefully acts as a vermifuge and febrifuge.

Its toxic action is that of a narcotic.

Tamarindus Indica L. "Tamarindō." No. 199.

A native of India, but cultivated and naturalized in most tropical countries.

The legumes, tamarinds, enclose a sweet, very acid pulp, which possesses excellent refreshing, refrigerant and laxative properties.

It is used pharmaceutically in the preparation of confection of Senna. It is much used in Cuba in the preparation of "refrescos", refreshing drinks, like lemonade, etc.

Poinciana regia Boj. No. 84. "Flamboyant." A large and elegant tree introduced from Europe, cultivated much in gardens, etc.

Rhizophoraceæ.

Rhizophora Mangle L. No. 231. "Mangle colorado," Red mangrove. A very common tree, growing along the sea shore in the edge of the water.

It contains an abundance of tannin and is much used by dyers and tanners.

It is used medicinally as a hæmostatic and febrifuge. From incisions in the trunk of the tree a juice exudes, which when dry much resembles kino, both in appearance and properties. It is exported to Europe under the name of "Kino de America" or "Kino de Columbia" (American or Columbian Kino). The wood of this strange tree —strange because of its habitat and the germination of the seeds while still on the tree, a long heavy radicle being developed before falling and planting itself in the mud or water below — is utilized in various ways and because of its tough and durable qualities, is called in English regions by the significant name of "Horse Flesh."

Myrtaceæ.

Punica granatum L. "Granado" (Pomegranate). Introduced from Europe and Africa.

The astringent bark of this tree has long been known to be an excellent anthelmintic. It contains four alkaloids, two of which, pelleterine and isopelleterine, furnish the anthelmintic properties of the drug.

Psidium Guava Radd. No. 1. "Guayaba." A low tree common throughout the tropics in savannahs. It is of importance as the tree from whose fruits the commercial "Guava Jelly" is made. The fresh fruits are refreshing and refrigerant.

Passifloraceæ.

Passiflora Sp. Several species of the genus are used as garden and decorative vines.

Carica Papaya L. No. 110. "Papaya." "Fruta Bomba." Common both cultivated and wild.

From the plant is derived the celebrated vegetable pepsin called papaïn.

When an incision is made in the plant, the bitter latex runs out almost in a stream, and from this the digestive principle is obtained.

Besides papaïn the latex contains a great deal of vegetable fibrin and vegetable albumin.

Papaïn is useful in all cases where pepsin may be used and is much more reliable than pepsin on account of its permanence and uniformity of strength.

It is used quite satisfactorily, injected into cancerous tumors, ulcerous sores, lupus, etc., and in dissolving the false membrane of croup. Besides its medical value the fruit of the "Papaya" (Paw-paw) is used for food, as it possesses good nutritive value.

Cucurbitaceæ.

Feuillea cordifolia L. "Jabilla," "Sécua." A native of the West Indies. The seeds (called Sequa seeds) are very bitter and drastic and act as an emmenogogue. They owe their activity to a crystalline principle, isolated by Dr. Peckolt of Rio de Janeiro, called "feuillina."

It is also sometimes used as a febrifuge.

Rubiaceæ.

Exostemma caribaeum Roem. and Schult. No. 383. "Macagua de Costa," sometimes called "quina." A native of tropical America.

It is used as a substitute for quinine, whose properties it possesses to a great degree. It is reputed among the peasants as having febrifuge properties, but this is disclaimed by medical authority. The bark and green fruits are extremely bitter, disagreeable and nauseous, acting as a powerful emetic.

Other species of *Exostemma* (as *E. floribundum* R. S. and *E. ellipticum* Gr.) possess the same properties as the above.

Genipa Caruto Kth. No. 327. "Jagua." A native of tropical America. From the edible astringent fruits of "Jagua" a kind of wine is made, which is used in dysentery and as an antisyphilitic.

Genipa Americana L. Is known and used the same as *G. Caruto* Kth.

Richardsonia scabra L. No. 272. "Ipecacuanha blanca" (White Ipecac.). A native of the West Indies. The plant is important for its production of the genuine "White Ipecac" of the drug trade, so valuable as an emetic, etc.

Compositæ.

Trixis frutescens P. Br. No. 703. "Chiriqui." Native to tropical America. The plant is useful as a vulnerary applied to ulcers and wounds.

Ageratum conyzoides L. No. 59. "Mentrasto." Native to tropical America, but introduced into all tropical countries. It is a sudorific and febrifuge and is used in atonic conditions of the digestive track.

Mikania gonoclada DC. No. 683. "Guaco." The juice of this plant is used in nearly all the West Indies as an antidote to poisonous snake bites; however, as such it has no use in Cuba, for poisonous snakes are foreign to the fauna of that island.

It is used for digestive derangements, as diarrhœa and cholera.

Eupatorium villosum Sw. No. 525. This plant has been used like "Guaco" as a remedy for cholera.

* Continued from p. 91.

Eupatorium ayapanoides Gr. "Ayapana." Indigenous to Cuba. It is corroborant and used in cholera morbus and as a febrifuge.

Nearly all the species of *Eupatorium* are aromatic, and *E. ayapana* Vent. is naturalized and cultivated for its diaphoretic properties.

Parthenium hysterophorus L. No. 250. "Escaba Amarga", Bitter broom. Tropical America. This bitter weed is used extensively as a febrifuge and for cranial neuralgia.

Its juice is useful as an external application to tubercular and syphilitic ulcers.

According to Dr. Ulrici of Havana, the plant contains an alkaloid, parthenine.

Bidens leucantha Willd. No. 432. "Romerillo blanco." All tropics. The plant is corroborant, sialagogue, emmenagogue and pectoral (?).

Lobeliaceæ.

Isotoma longiflora Presl. No. 34. A common weed in wet, shady places. Said to be one of the most poisonous plants in the West Indies.

Sapotaceæ.

Achras Sapota L. No. 136. "Sapate." "Nespero." Native to tropical America. This tree furnishes one of the most delicious fruits of the island.

From the abundant white latex a kind of guttapercha is made. The bark, "Cortex Jamaicensis," is astringent and febrifuge. The kernels of the seeds are bitter and contain hydrocyanic acid.

Used effectively as a diuretic. The fruits are used against diarrhœa.

Chrysophyllum oliviforme Lam. Nos. 234 and 361. "Caimitillo." Damask Plum. Tropical America in savannahs, common. The bark of the tree is corroborant and astringent. The fruits have a sweet, agreeable taste, but are very astringent and when eaten in quantity cause gastralgia and constipation.

Chrysophyllum Cainto L. "Caimito." Same as the above. Fruits are called Star Apples in the British West Indies.

Apocynaceæ.

Allamana cathartica L. "Jazmin de la tierra" and "Barbero." Tropical America and India. The latex of this species is drastic and febrifuge. The leaves, in the form of an infusion, are cathartic and in large doses emetic and drastic.

Rauwolfia nitida L. No. 296. Native to the Antilles. The latex is very powerfully drastic, but possesses the disadvantage of producing great gastro-intestinal irritations.

Rauwolfia canescens L. No. 81. "Palo bonito." Indigenous to the Antilles. The latex of this shrub as well as that of one or two other species of *Rauwolfia* is acrid and poisonous.

Four gms. of the extract of the bark with 120 gms. of castor oil make an advantageous application in many chronic skin diseases.

Thevetia nereifolia Juss. "Cabalonga." Occurs in most tropical countries. Few plants are known which possess greater poisonous properties than this species. It owes its activity to two principles, thevetin and theverisin, both of which are energetic poisons. The former, thevetin, $C_{54}H_{84}O_{24}$, is a glucoside which is extracted from the seeds, but both principles occur in all parts of the plant, therefore all parts are poisonous, the seeds more active while the latex of the green plant is the most energetic.

Any part taken in large doses produces an abated pulse, horripilation with nausea, delirium, involuntary laughing, irregular convulsions, extreme agitation, singing, cries and talkativeness, fixed sight and finally death. No antidote is known.

Tabernæmontana citrifolia L. No. 18. "Pegojo," "Huevo de gallo." Indigenous to the Antilles. The bark of this shrub is corroborant and febrifuge, used internally and in baths. The latex is used as a caustic in treating warts, as a hæmostatic and in baths as a febrifuge.

Nerium oleander L. No. 207. "Adelfa." Original to Persia and N. Africa, but cultivated in most tropical countries in gardens and in colder climates as a green-house plant. It is the beautiful Oleander so much prized by lovers of potted plants. It is not generally known, however, to its admirers as one of the most poisonous cardiac paralyzants that exists.

Its strongest toxic properties seem to reside in its latex, that of the white flowered variety being most active. It is only used externally in skin diseases as carcinoma, etc.

The powdered leaves possess sternutatory properties.

Gentianaceæ.

Schultesia stenophylla Mart. No. 438. "Tabaco de sabana, flor rosado." Tropical America. This pretty little plant is a bitter tonic, corroborant and febrifuge. Several other Cuban members of this order, as *Eustoma exaltatum* Gr., *Enicostema littorale* Blume, *Voyria uniflora* Lam. and *Limnanthemum Humboldtianum* Gr., possess about the same properties as *Schultesia stenophylla* Mart.

Borragineæ.

Cordia globosa Kth. No. 450. This species and other members of the genus yield mucilaginous and emollient drugs. The berries of *C. alba* are edible.

Cordia geraschanthoides Kth. No. 717 and *C. gerascanthus* are valuable timber trees (Spanish Elm or Princes Wood).

Tournefortia gnaphalodes R. Br. No. 611 and *T. bicolor* Sw. No. 183. The flowers of these two species have exquisite odors, which might be utilized by perfumers.

Heliotropium Indicum L. No. 612. "Alacroncillo." Original to tropical Asia, but naturalized in most tropical countries. The plant is used as a vulnerary and in dysentery and hemorrhoids. Of the leaves an emollient poultice is made, useful in incipient anthrax.

Convulvulaceæ.

Ipomœa Quamoclit L. "Combustoria de hojas menudas." Original to India, naturalized in other tropical countries. The milky juice is sternutatory, the root is purgative.

Ipomœa Nil Roth. "Manto de virgin." Naturalized from India. The seeds are drastic and purgative like jalap.

Ipomœa Pes-capræ Sw. No. 614. "Boniato de playa." Most tropical regions on the sea shore. Used externally for arthritic pains and internally for gastric disorders.

Ipomœa Martinicensis Mey. No. 385. A native of the Antilles. Its tubers are cathartic.

Ipomœa cathartica Poir. No. 270. The tubers of this species are also cathartic.

Solanaceæ.

Solanum Melongena L. "Berengena." Indigenous to India. Cultivated in all tropical and subtropical countries for its large nutritive fruit called "Egg Plant."

Besides its nutritive value, the fruits are emollient and the leaves anodyne.

Capsicum baccatum L. Nos. 149 and 151. This species has the same properties and uses as *C. fastigiatum* Blume (Cayenne Pepper).

Scrophularineæ.

Herpestris Monnieria Kth. No. 381. "Graciola." It occurs in all tropical countries. In the form of a decoction, the plant is used as a diuretic and laxative; by some it is considered drastic.

Scoparia dulcis L. No. 191. "Escobilla." Common to all tropical countries. It has been used in gastro-intestinal troubles, but not satisfactorily, also in syphilis. It is astringent and as such the decoction of the root is used in the treatment of ureteritis, blennorrhagica, hemorrhoids, etc.

Capraria biflora L. No: 482. "Escabiosa." Original to tropical America. The infusion of the leaves is corroborant, digestive, stimulant and sudorific; in large doses it produces stupor and muscular paralysis.

Bignoniaceæ.

Bignonia unguis L. "Uña de gato." Tropical America. It is used as an antidote for poisoning by *Hippomane Mancinella* L., also as an antidote for snake bites.

Crescentia Cujete L. No. 9. "Güira," Calibash tree." Widely distributed throughout the tropics.

Dr. Peckolt of Rio de Janeiro has demonstrated that the pulp of the fruit is an excellent laxative, in small doses an aperient, in large doses an emetic. He says that the pulp mixed with water and vinegar is used as an emollient plaster in Brazil. In Cuba, the expressed pulp mixed with honey constitutes the "Miel de Güira," used in dressing wounds and contusions. It forms the basis of a proprietary medicine put up in Havana, called "Jaraba pectoral de Güira cimerone" (Pectoral syrup of wild gourd).

Dr. Peckolt discovered a new organic acid in this fruit, which he called crescentic acid. In addition, the fruit contains tartaric, citric and tannic acids, two resins, an aromatic and a bitter extractive, and a substance resembling indigo. The presence of tannin explains its efficacy in the treatment of diarrhœa and dysentery.

Acanthaceae.

Ruellia tuberosa L. No. 224, "Salta-perico." Throughout the tropics. The root and leaves are diuretic, purgative and emetic. The action is somewhat similar to ipecac. It is used in intermittent fevers, pneumonia, puerperal peritonitis, dysentery, etc.

Ruellia paniculata L. No. 702. A native of the Antilles. It possesses properties similar to those of *R. tuberosa* L.

Myoporineae.

Bontia daphnoides L. No. 497. "Bontia." Introduced from India. The flowers are emollient. The ripe berries furnish an emollient oil, which has vermifuge properties.

Verbenaceae.

Avicennia tomentosa Jacq. "Mangle blanco," White Mangrove. Indigenous to the northern part of South America, but naturalized on all tropical coasts.

A resin exudes from incisions in the bark, called "Manawa," which is used as an aliment. The green seeds cooked with the leaves of *Ipomœa campanulata* L. (not Cuban) are used as an emollient poultice.

The Arabs use the mucilaginous root of *Avicennia* as an aphrodisiac, which action is due to its corroborant properties.

Avicennia nitida Jacq. No. 80. "Mangle Prieto" (Brown or Black Mangrove). Of the same origin, occurrence and uses as *A. tomentosa* Jacq., and in addition is used as a febrifuge.

Nyctagineae.

Mirabilis Jalapa L. No. 286. "Maravilla de Perú." Indigenous to South America and Caribbean Islands. Cultivated in many countries as a garden plant, often naturalized.

It is commonly known in the United States as "four-o-clock." It has drastic properties as a medicine.

Bœrhaavia paniculata Rich. No. 104. Tropical America, Galapagos and Cape Verde Islands. A common weed in fields. It is used as a drastic drug somewhat similar to *Mirabilis*.

Amarantaceae.

Iresine celosioides L. No. 512. From the southern United States to Buenos Ayres. Called Juba's bush in Jamaica, where it is used as a stomachic by the negroes.

I know of no use being made of it in Cuba.

Other members of the order are emollient.

Chenopodiaceae.

Chenopodium ambrosioides L. No. 226. Warmer parts of America, Calif. to Chili. Naturalized in most warm parts of the world. The volatile oil contained in the seeds of this species and those of *C. anthelmintica* L. has excellent properties as an anthelmintic. (Called wormseed oil.)

Phytolaccaceae.

Petiveria alliacea L. No. 182. "Anamú." Native to tropical America. The root is antispasmodic, sudorific, diuretic, powerfully abortive, febrifuge and vermifuge; it is used in tooth ache, arthritic paralysis and dropsy.

Polygonaceae.

Coccoloba Uvifera L. No. 569. "Uvero." Indigenous to some of the Antilles. Common on the sea shore. The decoction of the bark and root is astringent, useful in diarrhœa and dysenteries. It formerly furnished what was called "Kino of Jamaica," but is not now on the market.

The fruits are edible.

Aristolochiaceae.

Aristolochia passifloræ folia Rich. No. 488. This as well as other Cuban members of the genus (*A. odoratissima*) are somewhat used as domestic medicines and possess much the same properties as our *A. Serpentaria*, *A. grandiflora* Sw., which is poisonous, being excepted.

Piperaceae.

Piper peltatum L. No. 514. "Caisimón." Tropical America. The whole plant is powerfully diuretic, especially the leaves and roots.

Piper umbellatum L. No. 7. "Caisimón." Tropical America. From the ripe, powdered seeds an oil has been obtained which has properties similar to oil of star anise. It, as well as the powdered seeds and infusion of the leaves, is used in atonic conditions of the digestive track.

Piper angustifolium L. No. 8. "Platanilla de Cuba," "Matico de Perú." Indigenous to tropical America. The leaves of matico are acrid, bitter, styptic and aromatic; they contain tannin, resin, a green volatile oil, a bitter principle (maticin) and a colorless crystallizable acid, matic acid. It is used in blennorrhagia, leucorrhœa, cystitis, impotency, hemorrhoids, etc. Externally it is used in the treatment of capillary hemorrhages.

Euphorbiaceae.

Pedilanthus tithymaloides Poit. No. 498. "Itimo real." Indigenous to the Antilles. The latex and seeds of this plant are irritant; the latex and root are noted emetics, emeto-cathartics and drastics; seeds emetic only.

The milk has been used locally in cases of carcinoma with good results.

Euphorbia pilulifera L. No. 2. "Yerba de la niña." Common weed throughout the tropics. This species is noted for its sedative effects in spasmodic conditions of the respiratory apparatus. It has been used with good results in asthma, the infusion in 1 gm. doses or the aqueous extract in 0.1 gm. doses being the most effective. It must be taken in an abundance of some vehicle to avoid its irritant action.

Hippomane Mancinella L. "Manzanillo," "Arbol del Diablo" (The devil's tree), "Pinipiniche." Tropical America. This dangerously poisonous plant has been proven[4] to be an energetic drastic, which in doses of 5–8 drops of the latex produces frequent evacuation. It is especially valuable in affections of the heart and in dropsy, when large amounts of serous matter are to be expelled. It is also diuretic.

In its use as purgative and hydragogue, much care must be exercised, as it is very poisonous in large doses and in unskilled hands is liable to prove treacherous. I have had several cases reported to me of peasants having taken "Manzanillo" as a purgative and died from its effects. The bark is used as a diaphoretic in cases of syphilis and as an antiphlogistic. The extract of the bark is used in treating intermittent fevers. For its poisonous effects, *Tecoma leucoxylon* Mart., *Bignonia unguis* L., *Jatropha gossypiifolia* L. and *Feuillea cordifolia* L. are used as antidotes.

Hura crepitans L. "Habá." Tropical America. The latex is very poisonous. Applied to the skin, it causes eruptive pustules resembling erysipelas. It owes its properties to an acrid crystalline principle called "hurine." The seeds of *Hura* are emetic and drastic.

Jatropha Curcas L. No. 100. "Piñon botija," Physic nut. Tropical America. The seeds of this species are effective purgatives. Several Cuban species of *Croton* yield aromatic barks, "Cascarillas."

(To be continued.)

[4] Dr. A. Betancourt, "Revista de Ciencias Medicas," Havana, Nov. 9 and 20, 1888.

Bismuth Subgallate and Subtannate.

By *Ferd. A. Sieker.*

About one year ago* the writer called attention to a simple method of distinguishing between these two salts. The subtannate is but "very slowly soluble in a five percent solution of sodium hydroxid but readily soluble in a boiling solution." "The subgallate dissolves almost instantly in a cold solution of sodium hydroxid." The original paper stated that it is very slowly soluble in a fifty (50) percent solution, but this is an error for a five percent solution (Liquor Sodæ, U. S. P.) was employed in this work. The behavior of these two salts toward a ten percent solution of crystallized sodium carbonate will also prove of service in distinguishing these two salts. Bismuth subgallate dissolves slowly in a solution of sodium carbonate at the ordinary temperature, but readily on the application of heat. The subtannate does not dissolve in a solution of sodium carbonate, even on prolonged boiling, but is decomposed. Bismuth subtannate was described as a canary yellow powder resembling the subgallate in appearance. On keeping, the salt gradually loses its beautiful color and assumes a dirty yellow color. The subgallate does not perceptibly change in appearance on long keeping.

Laboratory of Lehn and Fink, N. Y.

Notes on Several Fatty Oils.

By *Ferd. A. Sieker.*

The object of this paper is to describe briefly a number of fixed oils and to give a few tests, which may aid in their identification and in the determination of their purity.

Two of these oils have only a limited application in medicine, while the third (croton oil) is extensively used, but its constants (aside from specific gravity) do not appear to have been recorded. An analysis of these oils was not undertaken as this would have required the expenditure of much time, which was not at the writer's disposal. Especial attention is directed to the Hübl iodin number, which the writer generally applies in the determinations of the purity of fatty oils. If the iodin coefficient varies considerable from the limits of the normal figures, the oil is rejected. On the other hand the correct iodin number does not establish the purity of an oil for this must be verified by the application of other tests.

The following method[1] was applied in determining the amount of iodin the oils would absorb:

About 0.3 gm. of oil was brought into a 500 cc. flask provided with a glass stopper, 20 cc. of chloroform and 30 cc. of alcoholic iodin-mercuric chlorid solution was added and the mixture set aside for 24 hours. Twenty cubic centimeters of

* Pharmac. Review 1896, p. 86.

[1] Helfenberger Annalen 1892, p. 3.

10 p. c. solution of KI and 200 cc. water were then added and the excess of iodin determined by titration with $\frac{N}{10}$ $Na_2S_2O_3$. The iodin mercuric chloride solution was of such strength that 30 cc. required about 50 cc. of $\frac{N}{10}$ $Na_2S_2O_3$. A blank experiment was in every case made side by side with the sample.

Oil of Saw Palmetto. Saw Palmetto (*Sabal serrulata*) is a shrub that grows very abundantly along the sea coasts of the southern States[2]. "The fruit is about the size of an olive, dark purple or brown in color, very succulent and contains a pit or seed similar to the olive." According to Sherrard the dried mature fruit contains from 12 to 13 p. c. of fatty oil and about ½ p. c. of volatile oil. The same investigator describes the fixed oil as follows: "There seem to be 2 fixed oils, one of a light lemon color, and the other of a tolerably deep green with a shade of brown." "A complete separation of these two oils was not effected; each upon aging and oxidation showed a decided crystaline deposit, the former assuming a marked rancid sweet oil odor and taste; the latter retaining its mild and not unpleasant bland butyraceous odor and taste." "The sp. gr. of the total fixed oil is .8851, the congealing point 11.5° C. and the melting point about 19.5° C." According to Prof. Virgil Coblentz[3] the pulp contains a small percent of volatile oil, a large proportion of fixed oil, a fat, etc. The seed yielded an additional 12.12 p. c. of fixed oil of a pale yellow color and sp. gr. 0.9103, bland and insoluble in alcohol. It is soluble in ether and chloroform and saponifiable by alcoholic alkalies, but not by aqueous potassium hydrate.

F. A. Sieker[4] found 12.2 p. c. of oil in a commercial fluid extract and 12.98 p. c. in a fluid extract prepared by himself from the ground dried mature fruit. These oils were perfectly soluble in alcohol and petroleum ether, but were not further examined.

An oil prepared in Oct. 1895 with the use of alcohol as a solvent was examined in March 1897. Besides oil the alcohol extracted "extractive" matter, from which the oil was separated by decantation and filtration. The color was deep green. The specific gravity was found to be 0.9138 at 15° C. and 0.9016 at 25° C. These determinations were made with the use of a 25 cc. pycnometer. The oil is soluble in alcohol and ether and almost perfectly soluble in petroleum ether. It congeals at about 14° C. Three cc. of oil mixed with two cc. of nitric acid (sp. gr. 1.138) and ½ gm. copper filings did not solidify after 3 or 4 days contact. The Hübl iodin number was found to be 41.86 (average of 2 estimations). The acid number was 175.26 and the ester number 37.23, which makes the saponification number 212.49.

This oil can be distinguished from most oils by its solubility in alcohol. Castor oil, which is soluble in alcohol, possesses the iodin coefficient of 84.4 (Hübl).

Another sample of saw palmetto oil (alcohol extraction) prepared March 1897, gave the iodin number 41.7. Another sample of oil extracted with petroleum ether in Aug. 1895 gave the iodin number 43.38. It was almost perfectly soluble in alcohol. The specific gravity was not determined because the sample was too small. The acid number was 149.13 and the ester number 68.32, which makes the saponification number 217.45. The acid number of these oils is therefore unusually high. As stated above these oils were not fresh when examined, but were kept in small almost filled bottles, which were securely corked and kept excluded from direct rays of the sun and at a temperature varying from 10 to 35° C. according to the season of the year.

Oil of Pumpkin Seed. This oil is prepared from the seed of *Curcubita Pepo*, Linné. The seed contains about 30 p. c. of oil, which is soluble in ether, petroleum ether, benzene and carbon disulfid, but insoluble in alcohol. The color is reddish yellow, when seen in thick layers.

The oil was prepared in February 1896 and examined in March 1897. The specific gravity was found to be 0.9231 at 15° C. (25 cc. pycnometer). With nitric acid and copper it did not solidify after 3 or 4 days contact. The iodin number was found to be 118.84 and 118.14 (2 estimations). The acid number was 29.04 and the ester number 165.77, which makes the saponification number 194.81.

A commercial sample of oil, which was in the writer's possession for about 15 months was also examined. It possessed a yellow color and was perfectly soluble in ether, petroleum ether, benzene and carbon disulfid, but insoluble in alcohol. Treated with nitric acid and copper it did not solidify even after 3 or 4 days. The specific gravity could not be determined because the sample was too small. The iodin coefficient was found to be 113.7, which is lower than that of the sample described above.

Croton Oil. The U. S. Pharmacopœia of 1890 describes this as "a fixed oil expressed from the seed of *Croton Tiglium* (nat. ord. *Euphorbiaceæ*)." According to Benedikt[5] croton oil differs from most oils in being devoid of olein and therefore does not solidify with nitric acid. It contains stearin, palmitin, myristin and laurin, also the glycerol compounds of œnanthylic, capronic, valerianic, butyric, crotonic and tiglinic acids.

A sample recently prepared by expression from the seed was examined with the following results: It is a thick yellow liquid possessing the specific gravity 0.9445 at 15° C. It is soluble in ether, carbon disulfid, petroleum ether and chloroform. Equal volumes of oil and concentrated sulfuric acid gave a clear dark brown mixture, but this is not characteristic. The iodine number was determined to be 107.02 and 108.01 (two estimations.) The acid number was found to be 14.99 and 14.72 (two estimations) and the saponification number 196.7 and 192.4 (two estimations). The color was however very dark after boiling with alcoholic caustic potash solution and therefore the saponification number could not be accuratly determined by direct titration. The method proposed by P. C. McIlhiney[6] for determining the Koettstorfer figure of dark colored substances was not applied.

A small quantity of crushed seed was exhausted with petroleum ether. The iodin number of the oil thus obtained, was found to be 110.6.

Laboratory of Lehn and Fink, N. Y.

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[2] C. C. Sherrard, Proc. Am. Ph. Assoc. 1894, p. 311.
[3] Proc. Am. Ph. Assoc. 1896, p. 536.
[4] Pharmac. Rundschau 1895, p. 236.
[5] Analyse der Fette und Wachsarten von Dr. R Benedikt, p. 239.
[6] J. Am. Ch. Soc. 1894, p. 408.

MONTHLY REVIEW.

Commercial Reports.

Semi-Annual Report of Schimmel & Co. (Fritzsche Bros.), **Leipzig & New-York.**

NOVELTIES.

Cardamom Oil, Bengal. According to Prof. E. M. Holmes, Bengal cardamom is derived from *Amomum aromaticum* Roxb. and not from *Amomum subulatum* Roxb. as stated in Flückiger's Pharmacographia.

On distillation we obtained from Bengal cardamom 1.12 percent of a light-yellow oil having the sp. gr. of 0.920 at 15°, a laevogyrate rotation of — 12°41′ and a strong odor of cineol; it is soluble in one or more parts of 80 percent alcohol. The larger part passed over below 220° in a fractional distillation, leaving, however, a rather large residue. In order to ascertain the presence of cineol, some of the first fraction was diluted with 15 times its volume of petroleum ether and dry hydrobromic acid was passed into the mixture, properly cooling it. By subsequent decomposition with water, pure cineol was separated from the hydrobromic acid addition-product; the cineol had its boiling point at 175° to 176°, the sp. gr. of 0.924 and was optically inactive; after oxidation by means of potassium permanganate by the method of Wallach and Gildemeister*), it yielded cineolic acid, melting at 197°.

Ceylon as well as Bengal cardamom, therefore, contain cineol and both have some resemblance to each other in the odor; but the oil of Bengal cardamom will hardly ever find any practical use for want of the characteristic cardamom aroma.

Schinus Pepper-tree Oil. *Schinus molle* L., a tree indigenous to South America is commonly cultivated in Southern Europe on account of its graceful pinnate leaves and sweetly scented yellow racemes. A beverage, somewhat resembling wine, is prepared from its aromatic berries. In taste, they are first sweet, then spicy and finally sharp and peppery, wherefore they are much used in Greece in place of pepper. In odor, they resemble elemi, but at the same time recall the odors of pepper and juniper.

We distilled a lot of the berries received from Mexico and obtained 5.2 percent of a thin oil having the odor of phellandrene, the sp. gr. of 0.850 and an angle of rotation of + 46°4′; it furnishes a clear solution with several parts of alcohol.

When treated with sodium nitrite and glacial acetic acid in its solution in petroleum ether, the characteristic phellandrene nitrite is formed. When shaking the oil with Sodium hydrate solution, a small quantity of a substance which consists mainly of a fatty acid is obtained; only traces of phenols could be found.

Pepper-tree oil was examined in 1884 by Spica (Gazetta chimica 14, 204); he found pinene and a phenol which the author believed to be thymol on account of its nitrite, melting at 156°, but he failed to obtain this phenol in crystals, although thymol readily crystallizes.

According to the "Jahresbericht über Fortschritte der Pharmacie &c." 1887, p. 25, pepper-tree oil was obtained by Helbing by distillation of the berries with steam. He obtained 3.357 percent of oil.

*) Annalen der Chemie 240, 208.

Valerian Oil, Mexican. We recently distilled a lot of Mexican valerian roots which had a strong odor of valerianic acid but in their appearance little resembled the German root. We furnished Prof. E. M. Holmes in London with a sample of the root and he favored us with the information that three species of *Valeriana* grow in Mexico, all of which are used in medicine:—

1. *Valeriana mexicana* D. C., called in Mexico "cuitta-patti". A sliced tubercular root 4 Cm. or more in diameter; it contains 0.91 percent of valerianic acid.
2. *Valeriana ceratophylla* H. B. K., called in Mexico "raiz del oso" and "jicama contra el tifo". A ligneous rhizome 20 to 30 Cm. long with a parchment-like periderm.
3. *Valeriana tolucana* D. C. "Mazatetes". Indigenous to the states of Mexico and Mechoacan; is very rich in valerianic acid.

Prof. Holmes is of the opinion that the sample sent to him belongs to the first named species, but a definite conclusion could not be arrived at for want of leaves and flowers, requisite for a botanical determination.

In distilling the root, we obtained a clear distillate free from any oil, and it was not before cohobation of the distillate that a slight oily separation was obtained, having the disagreeable pungent odor of valerianic acid.

The specific gravity of the oil is 0.949 at 15°, it is optically inactive and is entirely taken up when shaken with solution of sodium hydrate, leaving only a few flakes. Its figure of acidity was found by titration with alcoholic potassa solution to be 415, corresponding to 89 percent of valerianic acid hydrate, $C_5H_{10}O_2+H_2O$.

This species of Mexican valerian root therefore yields almost no oil at all, but only free valerianic acid. As the root has the odor of this acid in a marked degree, it seems that it contains the acid in its free state, so that it is not formed in the process of distillation.

CONTRIBUTIONS FROM THE RESEARCH LABORATORY IN GARFIELD, N. J.

Camphor-wood Oil, Venezuelan. We have received from Prof. H. H. Rusby of the New-York College of Pharmacy a lot of a Venezuelan wood in large blocks of a rather soft structure and of a faint odor of borneol; it readily splits and shows a silky lustre somewhat striated by darker longitudinal as well as latitudinal discolorations. For want of flowers and fruits, Mr. Rusby was unable to make a botanical determination, but supposes that the wood is derived from a *Nectandra* or *Ocotea* species (Lauraceae).

We obtained on distillation 1.15 percent of a light-colored oil of the very high sp. gr. of 1.155 and the opt. rot. of +2°40′ in a 100 Mm. tube. The oil has a faint odor of Canada snake root and solidifies to a crystalline mass at common temperature. When freed from any liquid portions by means of filtration and subsequently dissolved and recrystallized from alcohol, fine, colorless prisms are formed, melting at 28.5°. The crystalline mass is soluble with dark-red color in concentrated sulfuric acid; when this solution is poured into water, brown flakes are separated. When boiled

with an alcoholic solution of potassium hydrate, a compound is formed, crystallizing from its alcoholic solution in fine plates melting at 55° to 56°. These products and reactions are conclusive that the crystalline part of the Venezuelan camphor-wood oil, amounting to about 90 percent, consists of apiol, which, on further observation, proved to be identical with common parsley apiol.

Clove Oil. In the course of our examinations of this oil we have isolated quite a large quantity of furfurol, well characterized by its reactions (phenylhydrazone, color-reaction with aniline and glacial acetic acid, and separation into furfurolalcohol and pyromucic acid.) The problem, however, still remained, what constitutes the principle of the particular fruit-etherlike flavor characteristic of oil of cloves and absent in mixtures of eugenol, caryophyllene and furfurol. This special flavor is particularly noticeable in the first fractions of the oil and we have separated, by fractionation in a vacuum, the most volatile portions from large quantities of oil of cloves. We found that besides furfurol other constituents are present which readily combine with bisulfite, but these compounds could not well be separated on account of their mucilaginous properties. The main part of the most volatile fraction boiled at 150° to 155°, but could not be entirely separated from furfurol before purifying it by shaking it with cold potassium permanganate solution, when it obtained a constant boiling point of 151° to 152°. An elementary analysis resulted in the formula $C_7H_{14}O$. It has a marked fruit-ether flavor and when added in a trace to a mixture of eugenol and caryophyllene at once imparts to it the characteristic clove aroma. This compound is little affected by oxidizing agents, but is gradually transformed into valerianic and acetic acid and traces of capronic acid by warm chromic acid mixture.

This result and the boiling point indicate the presence of normal-amyl-methylketone, $CH_3(CH_2)_4CO.CH_3$, as yet not observed as a constituent of essential oils. It is present only in so minute a quantity that one should hardly suppose that it could exercise such a marked odoriferous influence, but observation proves that this is the fact in this as well as in other essential oils with principles extremely volatile and present only in the most minute quantities. Other instances of this kind are the secondary constituents of the natural wintergreen and betula oils and the dimethylsulfide of the American peppermint oil, which by insignificant changes in their quantity can essentially alter the odoriferous character of these oils.

Besides methylamylketone, minute quantities of other compounds of inferior odoriferous significance, with a lower boiling point than eugenol, are contained in oil of cloves. We shall report on them later on.

Goldenrod Oil, Canadian. The oil of *Solidago Canadensis* was distilled by us in 1894 and its physical constants were stated in our Report of April 1894. A recent examination of the oil in our research laboratory has shown it to consist of 85 percent of terpenes, mainly of pinene and much less of phellandrene and dipentene, and perhaps also to contain some limonene. The portions having a higher boiling point consist of borneol and bornyl acetate and some cadinene. The total amount of borneol contained in the oil is 9.2 percent, of which 3.4 percent are acetate.

It is remarkable how closely the chemical composition of this oil approaches that of the needles of the *Pinus* genus, although both are so widely different in their botanical relations.

Spearmint Oil. Our spearmint plants had sufficiently developed since the first cut in July to permit a second one at the beginning of October. While the first crop had yielded 0.3 percent of oil this one realized only 0.18 percent; and the oil was less fine in odor and had a lower specific gravity and rotatory power, namely 0.961 and — 37°20′ against 0.980 and — 42°30′ of the oil of the first crop, whilst no fraction of oil heavier than water was noticed.

We are enlarging our spearmint fields this season and will again distill the herb in the progressive stages of its growth so as more closely to study its composition at these various stages.

Wormwood Oil. Only one constituent of this oil has as yet been determined, namely thujone, while small quantities of terpenes were supposed besides to be contained in the oil. The purity of the oil was thus far estimated by its specific gravity. In order to attain to some more definite tests, we have examined wormwood oil distilled by us in October 1895. It was of a dark-green color and had the sp. gr. of 0.932. By liberal treatment of its alcoholic solution with solution of sodium bisulfite, the greater part of thujone was separated and the remainder boiled with an alcoholic solution of sodium hydrate. After the alcohol had been removed by distillation, the saponified oil was separated by means of steam, leaving behind a considerable thick oily residue, partly soluble in ether. The insoluble part proved to consist of a sodium salt of an acid, which was recognized by its melting point as well as by the analysis of its silver salt to be palmitic acid. The aqueous salt-solution, remaining from the saponification, was neutralized with sulfuric acid, evaporated to dryness and the acids contained therein transformed into the corresponding esters; these, again, were separated by fractional distillation. As is the case with most esters contained in essential oils, the mixture of acids consisted of acetic and a little insovaleric acids.

The oil obtained by steam was several times distilled in a vacuum, and the portion having a lower boiling point was subsequently distilled under common pressure. A very small fraction boiling between 158° and 168° was thus obtained, containing phellandrene; an effort to ascertain the presence of pinene failed on account of the insufficient quantity of the fraction of the distillate, but in trying to obtain pinene nitrosochloride the characteristic blue reaction and a slight crystallisation were observed.

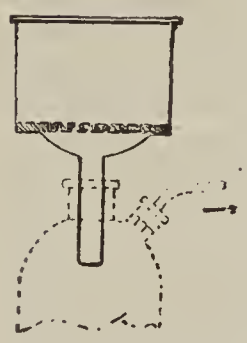
The quantity of terpene present is in any case an extremely small one, so much so that any adulteration with oil of turpentine can be easily ascertained. This is done by distilling from a sample of the wormwood oil about 10 percent, this distillate should render a clear solution with 2 parts of 80 percent alcohol. This simple test has proved a reliable one; we have examined a large number of commercial oils of wormwood and found them sophisticated in every case when the first fraction of the distillate failed to produce a clear solution with alcohol.

The fraction of oil passing over at 200° to 203° was found to consist of thujone; this could not be completely removed from the original oil by treatment with bisulfite, but it was fully identified thereby, as well as by obtaining its tribromide melting at 121° to 122°; but neither of these compounds could be obtained from the next fraction distilling at 210° to 215°, which upon acetylisation and saponification proved to be of an alcoholic nature. By careful oxidation with chromic acid mixture we succeeded in transforming it almost completely into thujone. The results of this examination, therefore, bear evidence to the presence of thujyl (tanacetyl) alcohol.

By a quantitative saponification of the original as well as of the acetylized oil, we have, furtheron, determined the amount of thujyl alcohol and acetate, and found it to be 17.6 percent of thujyl acetate, corresponding to 13.9 percent of thujyl, so that the total quantity of thujyl alcohol (free and as ester) contained in the oil is 24.2 percent.

Pharmaceutical Technique.

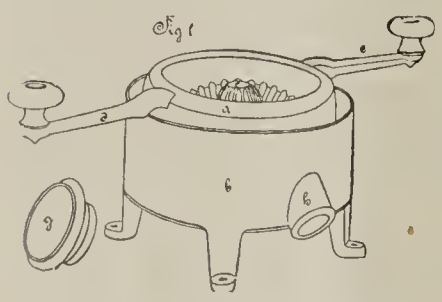
Suction Filter.*

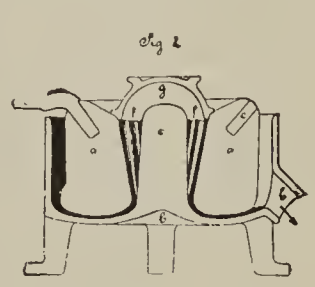


A new form of "Nutschenfilter," invented by Dr. Ackermann, is shown in the accompanying figure. It is made of porcelain and has the advantage over similar filters in that the filter-plate can be taken out and readily covered with straining cloth, filter-paper, or other filtering medium. The apparatus is attached to a suction flask by means of a perforated rubber stopper.

Comminution-Mill.*

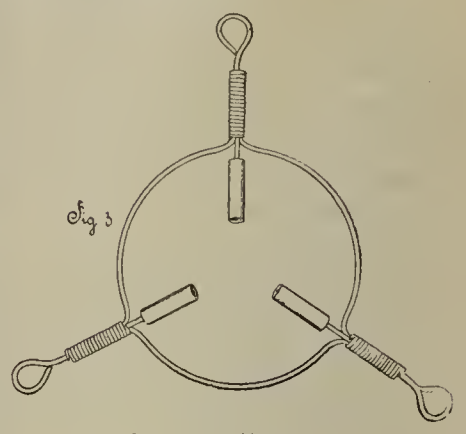
The mill shown in the accompanying illustrations is intended to furnish a strong yet not too expensive comminution apparatus for technical laboratories. It consists of a very heavy iron mill-work *a*, and an iron vessel *b*, in the middle of which a slightly conical grooved tongue *c* passes through the centre of the hopper *f*. The arms *d* and *e* are fastened to opposite points of the mill-work.





The substance to be comminuted is well dried, placed into the hopper *f*, the handles inserted, the cover *g* fastened and the handles moved forward and back. As soon as the larger pieces have been crushed, one of the handles is removed and the other turned in a circle (like the handle of a small coffee-mill) until all the material has been forced out of the mill through the lateral opening *h*. The mill can be firmly screwed to a table and is easily cleaned with a brush.

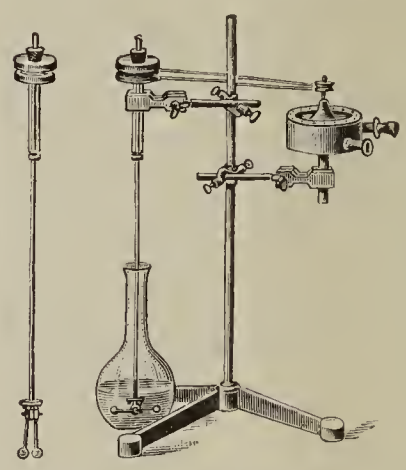
An Adjustable Crucible-Holder.*



In this apparatus as seen in Fig. 3, the crucible hangs in the space between three clay rods, which are fastened to wires. These wires can be moved forward and back so that the circular space between the points can be changed from 3—5 cm. in diameter, and so furnishes room for crucibles of various sizes.

A New Stirring-Apparatus.

This "Intensiv-Rührer" has been patented in Germany by Hermann Schultze and placed on the market by C. Gerhardt of Bonn on the Rhein. As the accompanying illustration shows, it consists of a glass rod, which can be rapidly rotated in the usual manner, and on whose lower end two hollow glass balls are so fastened by means of heavy platinum-iridium wire as to be movable. Ordinarily these hang vertically, but upon immersion into liquids they are buoyed up into a horizontal position. This simple device results in the following advantages: Firstly, the stirrer can readily be introduced into vessels of any shape, round-bottomed flasks being especially recommended since in these the stirring action is most intense. Secondly, the efficiency of the stirrer is remarkable. Using it in connection with a *Rabe's* turbine with 3.5 atmospheres water-pressure, 1.5 litres water and 200 g. benzol were so thoroughly emulsified, that even after 6 hours standing complete separation had not taken place, while with the use of other stirrers, under like conditions, the liquid became clear in 5—15 minutes.



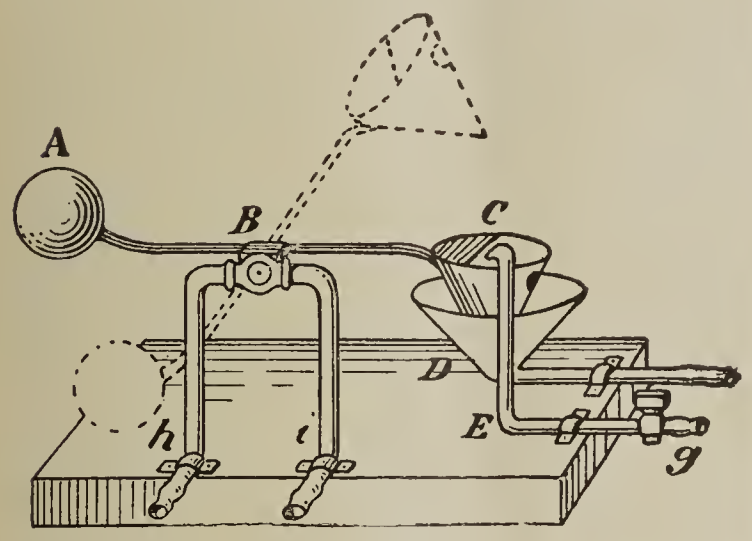
The "Intensiv-Rührer" is of special advantage, when the depth of the liquid is slight, when the liquid has become pasty due to the formation of a precipitate, when a rapid motion of the surface is desirable as upon the gradual addition of some other substance, or when an oil, floating upon the surface of the water is to be emulsified. The stirrer is about 40 cm. long, but is furnished in any length desired.

An Automatic Gas-Stopcock.*

This new apparatus, invented by Dr. Hugo Michaelis, is applicable wherever simultaneous water and gas supply is desired; as e. g., in working with a constant-level water-bath, or in heating a vessel with a reflux condenser. In case of accidental shutting off of the water supply, it prevents overheating of the bath, or evaporation of volatile vapors through the condensor, respectively. The apparatus is entirely automatic so

that an experiment can be carried on without any attention.

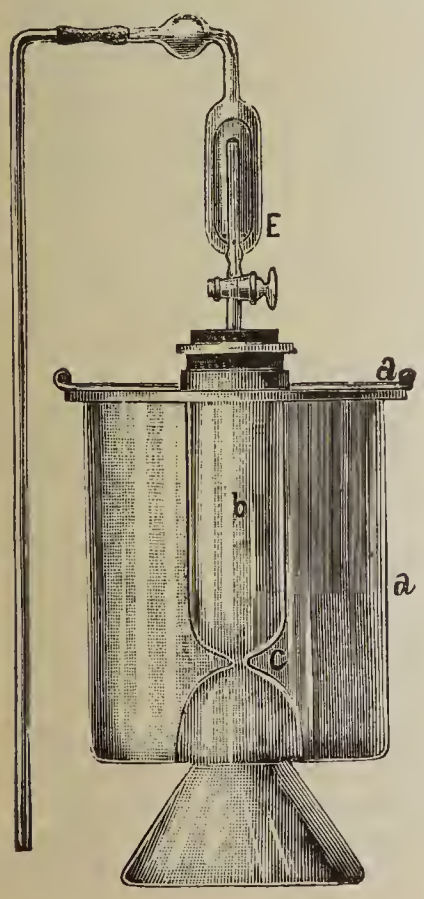
The apparatus works as follows: Tube *g* is attached to a faucet close to the one which connects with the water-bath or condenser; or still better, to the same faucet by means of a T-tube. The water flows through *g* into the funnel *C* which has an orifice at the bottom to let out the water, but always less than flows in.



The excess flows into the exit-funnel *D*. Funnel *C* is attached to one arm of a lever, which is fastened to the gas-cock *B*, while at the other end of the level is situated the counterpoise *A*. As long as *C* is filled with water, i. e., as long as water is running, the lever is in a horizontal position and the gas-cock is open. As soon as the water-supply ceases, the funnel is gradually emptied until the weight *A* moves the lever into the position indicated by the dotted lines; hereby the gas-cock is closed, and the flame is extinguished.

A New Gas-Generator.*

This apparatus, which was invented by Dr. Voeller, serves for the generation of Cl, H, SO_2, H_2S, CO_2 etc. As seen from the accompanying figure it consists of a cylindrical glass vessel of about 3 l. capacity, whose lower end is contracted and again widened so as to assume the shape of a Scheibler's desiccator. This vessel holds the acid. The substance to be acted upon by the acid is placed into another cylinder of about 700 cm. capacity, which is also drawn in near the bottom to about 2.5 cm. and then widens out into an open bell, 5 cm. high and 8 cm. wide. The opening at *c* is either closed with a perforated stopper or covered with broken glass to prevent the falling of any of the substance into the acid. The upper opening of the cylinder is closed with a rubber stopper, through which passes the exit-tube. Upon opening the stop-cock the acid rapidly rises into the cylinder, but can be so regulated as to attack only the lower portions of the material in the cylinder. The resulting salt solution, being heavier, sinks and fills the space beneath the inner cylinder. Upon closing the stop-cock the acid is forced back, and the subsequently developed gas fills the bell-shaped extremity of the cylinder. The exit-tube can be directly connected with a gas washing apparatus as shown in the figure.



Chemistry.

An Analytical Investigation of the Hydrolysis of Starch by Acids.

Few problems of commercial analysis have been so complicated and so discouraging as that of the determination of the components of starch conversion products. The well-known schemes of commercial analysis of worts and similar products of the action of diastase are based on the assumption that but two simple compounds are formed from starch—maltose and dextrin. In the case of glucose syrups and starch sugars, which are the results of acid hydrolysis, it is known that the reaction proceeds farther, as dextrose is formed from the maltose and dextrin.

Musculus and Gruber[1] decided that these reactions went on together, so that, except at the very beginning or final stage of hydrolysis, all of these compounds must be present in solution.

The analysis of acid-converted starch products must, therefore, take in consideration the presence of the third compound, dextrose.

Much doubt, however, has been thrown on the accuracy of such analysis, as during the past twenty years the researches of O'Sullivan, Brown, Heron, Morris, Bondonneau, Herzfeld, Musculus, Bruckner, Fischer, and other distinguished investigators, have shown that not only the simple compounds referred to can be isolated from starch products, but also many other of quite distinct optical and chemical properties. Space will not permit a review of this work, which is in many points conflicting. The recent conclusion of Lintner and Düll is that the following compounds result from hydrolysis[2]:

Hydrolysis withoxalic acid: Amylodextrin, erythrodextrin I, erythrodextrin II a, erythrodextrin II b, achroodextrin I, achroodextrin II, isomaltose, dextrose; with diastase: amylodextrin, erythrodextrin I, achroodextrin I, achroodextrin II, isomaltose, maltose.

Others, as Brown and Morris,[3] deny the existance of the isomaltose of Fischer, Lintner, and Düll, and mention another compound, maltodextrin, as intermediate between dextrin and maltose.

In 1885, Brown and Morris[4] discovered the remarkable law that at any stage of the conversion of starch, by diastase, the total product, in its optical properties

* These apparatus have been placed upon the market by Max Kaehler & Martini of Berlin.

1 Bull. Soc. Chim., 2, 30.
2 Berichte 28, 1522—1531.
3 J. Chem. Soc., August '95.
4 Annalen 231, 131.

and relation to Fehling's solution, behaved exactly as if made up of two compounds only, maltose and dextrin, so that it was possible by taking the rotatory power to calculate at once the cupric reducing power if the total carbohydrates were known. This law indicated that, however, complicated the bodies isolated, they could be considered as existing in solution as two simple compounds, and did much to establish the validity of the principles of the usual commercial analysis of worts and similar products.

The method of analysis of glucose syrups and starch sugars implies the assumption of a similar law, but the proof that this law actually exists under varying conditions of hydrolysis apparently has heretofore not been worked out.

Rolfe and Defrew have recently made investigations, first, to determine whether there was any simple constant relation between the optical rotation and the cupric reducing powers of starch products hydrolyzed under different conditions; and secondly, whether any laws could be found affecting the three simple bodies assumed to be formed and determined by the usual methods of analysis. Incidentally they collected some data as to the speed of hydrolysis, influence of carbohydrates on specific gravity of solutions, and some looking to a more rapid and accurate method of determining cupric reducing power of Fehling's solution.

In the calculation of total solids, these were determined from the specific gravity on the assumption, first laid down by Balling and Brix and corroborated by the authors, that 1 g. of mixed carbohydrates in 100 cc. of solution increased the specific gravity by 0.00386. This factor was found exact for approximately 1070 solutions of cane sugar, and nearly so, for solution of the products of starch conversion.

The results pointed to the remarkable fact that the cupric reducing power of the total product bears a constant relation to the specific rotatory power, even when the starch is hydrolyzed under widely varying conditions; as, e. g., when using different acids, different amounts of starch, or when varying the temperature, pressure and time of action.

From the results as a whole, Rolfe and Defrew conclude that the evidence is strong: (1) That in any homogeneous acid-converted starch product, irrespective of the hydrolysis, the specific rotatory power always represents the same chemical composition. (2) That but three simple carbohydrates, possibly in molecular aggregates, exist in the solution of a starch product hydrolyzed by acids. [Techn. Quart., 10, p. 133.]

Eucaïne A.

The older eucaïne, which is now designated eucaïne A in distinction from eucaïne B (p. 77), was briefly mentioned (p. 37) as a new local anaesthetic introduced last year. According to more recent reports it is prepared in the following manner: Hydrocyanic acid is added to triacetonamine, a condensation product of acetone and ammonia, and the cyanhydrin is hydrolized. In the resulting acid the hydroxy hydrogen is replaced by a benzoyl group, and the carboxyl hydrogen and imide hydrogen are replaced by methyl, benzoyl-β-methyl tetramethyl-γ-oxypiperidine carbonic acid methyl ester resulting. The free base is sparingly soluble in water, readily soluble in alcohol, ether, chloroform, benzene. The large crystals from the ethereal solution melt at 104—105°. With acids it forms neutral salts.

The hydrochloride, $C_{19}H_{27}NO_4.HCl.H_2O$ crystallizes from water in scales or tablets and is soluble in water to the extent of 9 to 9.5 p. c. The solution can be boiled without decomposition. Ammonia, the fixed caustic and carbonated alkalies precipitate it as a gummy mass. With a few drops of a 5 p. c. chromic acid solution its aqueous solution forms a lemon-yellow crystalline precipitate. A 1 p. c. solution (5 ccm.) with a 10 p. c. potassium iodide solution (3 cm.) yields first a milky turbidity, then a magma of crystalline hydriodide.

It is compatible with antiseptics; e. g. phenol, trikresol, guaiacol, naphthol, resorcinol, salol, ichthyol, formalin, iodoform; with hydrocarbons, such as ligroin, petroleum, vaselin, benzene, toluene; with fats and oils; with volatile oils, camphors and terpenes; with lanolin; with alcohols, incl. glycerol; with esters such as acetic ether and gaultheria oil; with chloroform, chloral and chloral hydrate; with alkaloids such as quinine and morphine, also alkaloid like substances like antipyrine, phenacetine; with all sugars.

For the production of anaesthesia on mucous membranes and on painful wounds Prof. Liebreich recommends an ointment prepared from one part of eucaïne hydrochloride A, 2 parts olive oil, and 7 parts lanolin. [Pharm. Centrh. 38, p. 281.]

Lactic Acid Fermentation.

Certain bacteria which show considerable resistance toward heat, Miquel has designated thermophilic (from (from θερμός, warm, and φίλος, friend). Cambier has studied the action of such toward fermentable substances. A peptone nutrient solution, to which 10 p. c. glucose and calcium carbonate had been added, was inoculated with garden soil, and the mixture kept in a thermostat at 70°. Soon carbone dioxide with traces of hydrogen were given off and continued to be eliberated until the solution no longer reduced Fehling's solution. Only traces of an alcohol distilled over and the residue contained calcium lactate. The conversion of the glucose into the lactic acid was almost quantitative. The carbon dioxide had been liberated from the calcium carbonate.

[Pharm. Centrh. 38, p. 294; from Chem. Ztg. Rep. 1897, p. 85.]

Guaiacol Phosphide.

This compound of phosphorus and guaiacol is prepared by Ballard as follows: 124 g. of crystallized guaiacol are dissolved in a solution of 50 g. caustic soda in 90 p. c. alcohol. To the clear solution phosphorus trichloride is added until the solution is no longer alkaline to phenolphthaleine. The precipitated salts are removed by filtration, the alcohol from the filtrate by distillation and the residue is extracted with absolute alcohol. The solution is evaporated on a water bath. The crystallized product is recrystallized from absolute alcohol and finally dried over sulphuric acid. The crystals have the formula $P(C_6H_4{:}OCH_3).O)_3$, and melt at 77.5°. Creosote treated in a similar manner gives a thick reddish-yellow liquid which consists

of the phosphorous compounds of the various phenols present in the creosote. To this the author proposes to give the name phorphatol.

[Pharm. Journ., 1897, p. 368; from Rep. de Pharm. [3], 9, p. 104.]

The Distribution of Alkaloids.

The following list is taken from Einführung in das Studium der Alkaloide (pp. 39 and 124), the German translation by Dr. Hermann Kunz-Krause of the Italian work of Dr. Icilio Guareschi, Director of the Pharmaceutical-chemical Institute of the University of Turin. Many of the alkaloids enumerated are found in more than one plant. Thus berberine has been isolated from more than twenty plants representing from five to six natural orders. As a rule only that plant is mentioned from which the alkaloid is primarily prepared. However desirable a more complete list in this respect might have been, the following enumeration is by no means devoid of interest. Those who desire to know more about the individual alkaloids, will have to be referred to the original. The chapter on plant alkaloids, or alkaloids proper covers no less than 140 quarto pages of the monograph.

I. Kryptogams.

Fungi.

Agarythrine —, Agaricus ruber.
Choline, $C_5H_{15}NO_2$, Agaricus muscarius, Boletus luridus, Claviceps purpurea, etc.
Ergotinine, $C_{35}H_{40}N_4O_6$ (?), Claviceps purpurea.
Muscarine, $C_5H_{15}NO_3$, Agaricus muscarius L.

Lycopodiaceæ.

Lycopodine, $C_{32}H_{52}N_2O_3$, Lycopodium complanatum L.
Pillijanine, $C_{15}H_{24}N_2O$, Lycopodium Saururus Lam.

I. Phanerogams.

A. Gymnoperms.

Coniferæ: Taxineæ.

Taxine, $C_{37}H_{52}NO_{10}$ (?), Taxus baccata.

Gnetaceæ.

Ephedrine, $C_{10}H_{15}NO$, Ephedra vulgaris, var. helvetica.
Pseudoephedrine, $C_{10}H_{15}NO$, species unknown.
Ephedrine, $C_{13}H_{19}NO$, Ephedra monostachia.

B. Angiosperms.

1. Monocotyls.

Amaryllidaceæ.

Amarylline, —, Amaryllis formosissima.
Belamarine, —, " "

Araceæ.

Choline, $C_5H_{15}NO_2$, Acorus Calamus.
Calamine (methylamine) (?), CH_3NH_2, Acorus Calamus.

Gramineæ.

Avenine, —, Avena sativa.
Soliine, —, Solium temulentum.
Temulentine, —, Solium temulentum.

Liliaceæ. a. Lilieæ.

Imperialine, $C_{35}H_{40}NO_4$ (?), Fritillaria imperialis.
Tulipine, —, Tulipa gesneriana.

b. Melanthieæ (Colchicaceæ).

Colchicine, $C_{22}H_{25}NO_6$, Colchicum autumnale.
Colchicëine, $C_{21}H_{23}NO_6 + \frac{1}{2}H_2O$, Colchicum autumnale.
Cevadine, $C_{32}H_{49}NO_9$, Veratum Sabadilla.
Cevadilline, $C_{34}H_{53}NO_8$, " "
Veratrine, $C_{37}H_{53}NO_{11}$, Veratum Sabadilla.
Sabadine, $C_{29}H_{51}NO_8$, " "
Sabadinine, $C_{27}H_{45}NO_8$, " "
Jervine, $C_{26}H_{37}NO_3$, Veratrum album.
Rubijervine, $C_{26}H_{43}NO_2 + H_2O$, Veratrum album.
Pseudojervine, $C_{29}H_{43}NO_7$, " "
Protoveratrine, $C_{32}H_{51}NO_{11}$, " "
Protoveratridine, $C_{26}H_{45}NO_8$, " "

c. Smilaceæ.

Majaline, —, Convallaria majalis.

Palmæ.

Apirine, —, Cocos nucifera and C. ladidea.
Arecaïne, $C_7H_{10}NO_2 + H_2O$, Areca Catechu.
Arecaïdine, $C_7H_{11}NO_2 + H_2O$, " "
Arecoline, $C_8H_{13}NO_2$, " "
Choline, $C_5H_{15}NO_2$, " "
Guvacine, $C_6H_9NO_2$, " "

2. Dicotyls.

Anacardiaceæ.

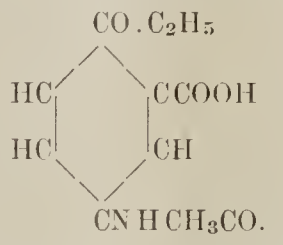
Loxopterygine, $C_{26}H_{34}N_2O_2$(?), Loxopterigium Lorentzii.
Picramnine, —, —.

Anonaceæ.

Asimine, —, Asimina triloba Adin.

Benzacetine.

(Phenacetine carbonic acid, Acetamidosalicylic acid).



This substance forms needle shaped crystals and is slightly soluble in water and freely soluble in alcohol. It fuses at 205° C. Benzacetine combines with bases and forms salts, such as lithio-benzacetine, which are freely soluble in water.

Pure benzacetine, as well as its lithium compound, have been shown by the experiments of Frank (Centralblatt für Gynaekologie 1894, No. 35) to be powerfully antinuralgic and have proved very beneficial in many cases without adducing objectionable secondary phenomena. Pure Benzacetine given in doses of 0.5—1.0 grm. (gr. 8—16) is particularly valuable as a sedative in sleeplessness and in certain excited conditions of nervous hysterical and anaemic women where it is desirable to avoid narcotics. A. Reiss (Therap. Monatsh-1896, June) has obtained very satisfactory results by administering benzacetine, coffeïne and citric acid, especially in chronic cases of habitual headache, neuralgia and migraïne in mental patients and others, but he did not derive any benefit from the use of benzacetine as a soporific.

Testing of Quinine.

O. Hesse contributes a second paper on Kubli's method for testing quinine which is intended as a refutation of objections made by Kubli to his first paper. In order to understand the situation of both men, Kubli's articles in the Pharm. Zeitschr. f. Russl. as well as Hesse's first article in the Archiv for 1896 would have to be consulted. The last paragraph by Hesse was certainly not written in a scientific spirit.

[Arch. f. Pharm. 235, p. 114.]

Botany and Pharmacognosy.

Cultivation of Peppermint in Russia.

Considerable attention is given in Russia to the culture of *Mentha piperita*. In the district Rostow alone in one year about 16 million kilos of the herb were gathered. The best mint comes from the neighborhood of Wanow. The collection of the ethereal oil is carried on in the most primitive manner, the result being a small yield of an oil unsatisfactory in quality.

[Pharm. Post, 1897, p. 218.]

Cultivation of Sumbul in England.

Mr. E. M. Holmes believes the sumbul root of the market at the present time not to be the true musk root from *Ferula Sumbul*, but the product of a related species. Sumbul of present market consists of smaller, more cylindrical pieces than the true article, with a faint musky odor instead of the fragrance characteristic of the drug of twenty-five years ago. The upper part of the root stalk of the present drug is often branched, something not seen in the true sumbul which in the upper portion tapers to a rounded fibrous apex. The texture of true sumbul is not so firm as that of the root now sold.

Mr. Holmes is cultivating true sumbul plants and contributes valuable information. The fleshy roots in autumn lose their small rootlets and can then be safely transplanted, new rootlets appearing the following spring. In February or March, as soon as the ground is no longer hard from continued frost, one or more young leaves are sent out. The fully developed leaves appear in April and grow until July when they turn yellowish and gradually wither. The root increases in size every year, retaining its oval form presumably until it attains a sufficient reserve of nutrition to enable it to send up the large fruiting stem. The inflorescence of a specimen that bloomed in the Kew Gardens some years since reached a height of 8 feet, when the plant died.

Mr. Holmes' plants, now 6 years old, have not flowered. A root dug not long since was 6 inches long and 3½ inches in diameter, with a strong, persistent musky odor when injured, exuding a white, milky juice. The rootlets are somewhat twisted and spread nearly horizontally in the soil. It is obvious from the shape that such a root might furnish one cylindrical and two tapering sections of the thickness of the old-fashioned drug; the cylindrical pieces 2 or 3 inches long of the present day are out of the question.

If good seed could be obtained, sumbul could doubtless be cultivated in temperate regions without difficulty. It is hard to obtain good seed, since the fruits are very liable to injury by rain.

[Pharm. Journ. 1897, p. 347.]

Chicle Gum and its Use.

Mr. Edward N. Butt communicates some interesting facts obtained in his travels concerning the collection and use of the chicle gum derived from *Achras sapota* L., a tree growing wild in the forests of Yucatan and the adjacent states of Central America. While indigenous from Mexico to Guiana, it is extensively cultivated in tropical countries. It produces a valued edible fruit.

In the states of Yucatan and Campeche, the peons, the lower class of natives, select in the forest trees sufficiently mature and cut V-shaped incisions in the stem. The juice which exudes soon becomes indurated by exposure to the scorching heat of the sun and the gum in this form is collected. The trees are then allowed to rest for four or five years, after which period they are again fit to undergo the tapping process. When a sufficient quantity of the crude gum has been collected, it is pressed into thick, oblong blocks, which weigh from twenty-five to thirty kilos each. The collector then turns over the stock to the merchants. The exporter usually packs three of these blocks in a bale, the average weight of each bale being about eighty kilos. In the year 1895 no less than four million pounds of chicle gum of an estimated value of one and one-half million dollars, was imported into New York from Mexico. In the United States it serves as a basis for the manufacture of chewing gum.

Concerning the circumstances leading to this use of the gum, Mr. Butt tells an interesting story. A quarter of a century ago, chewing gum in the United States consisted in the main of two kinds, prepared spruce gum and shoemaker's wax. A little later, a preparation of paraffin wax was introduced. Chicle gum was first used for this purpose about fourteen years ago. A lot of this Mexican gum was sent to New York on board ship, partly as balast and partly in the hope that it might be found useful to bookbinders or serve some purpose in the leather trade. After several trials, no use could be found for it and in the absence of any purchaser, it was decided to tow it out to sea and throw it overboard to get rid of it. Just at this time, one of the many men standing on the wharf casually picked up a piece and found it would "chew." It occured to him that it might serve as a basis for a new chewing gum. The experiment was a success in every way, and an immense business grew from it.

[Pharm. Journ. 1897, p. 328.]

Cinchona Cultivation in India.

The last report on the cinchona plantations of Bengal (Planters' Gazette of India, Dec. 1896) states that the present object of the government is to provide, without actual loss to itself, a cheap fever-remedy for the people of India; the capital cost of the plantations having been paid off some time ago, it is no longer necessary to sell at a profit.

With the exception of small quantities supplied to the medical depots and government-institutions, the whole of last year's crop, amounting to 467,190 lb of bark, was handed over to the quinine factory; 170,000 lb in addition was bought from various tea companies in Darjeeling. From this were produced 9,004 lb of quinine sulphate and 3,124 lb of "cinchona febrifuge." There has been an increase of 2,725 lb in the issue of quinine sulphate, partly owing to the demand for pice packets to be sold through the post-offices, and partly to the demand in connection with the Chitral expedition. At the end of the year there remained in stock 2,357 lb of quinine sulphate.

The scheme for the sale of quinine through the post-office department makes steady progress and the demand is increasing with such rapidity that it has been necessary to limit the sales in Bengal and Assam and to discontinue the supply to other provinces.

As a further satisfactory result of the operations it appears from the Sanitary Commissioner's report that there is a general correspondence between fever mortality and the demand for quinine.

The severe drought of last year has had a very damaging effect upon the young seedlings with which the plantations were to have been extended, but, on the whole, the Lieutenant-Governor considers the results obtained are entirely satisfactory.

[Journ. Imp. Inst., 3, p. 155.]

Cassava.

The cultivation of cassava for a food-stuff in times of dearth to be used by the peasantry of St. Elizabeth (Jamaica) has recently been occupying the attention of the Agricultural Society of Jamaica.

The preliminary investigations of the committee appointed by the Society, as reported in the Jamaica Daily Gleaner of January 14, 1897, show that at present no accurate statistics exist as to: 1) the cost of cultivation; 2) the yield per acre of cassava; 3) the quantity of starch from a given weight of tubers. The committee, however, consider the subject of sufficient importance to warrant further investigation and the institution of careful experiments in the growth of cassava under different conditions as to soil and climate, and in the manufacture of its products by the best methods.

Cassava is cultivated at a nominal cost, and is said to be one of the most productive plants in the world, an acre of cassava yielding more nutritive material than six acres of wheat. The cultivation entails but little labor and may be undertaken by women and children; for, except in the early stages of growth, the plant is almost independent of moisture and scarcely requires attention. Even under the present crude conditions a cassava patch yields an abundant harvest, and, if the plant were systematically grown by the settlers in those portions of the island subject to drought, it would greatly ameliorate their condition during periods of dearth.

The cultivation of cassava appears to have been long neglected in the island of Jamaica, and it is satisfactory to know that such a valuable economic product is likely to be more utilized in the future than in the past.

[Journ. Imp. Inst., 3, p. 155.]

The Poisonous Alkaloid of the Aconite of Nepaul.

At the instance of the Government of India, an investigation is being conducted, in the Scientific Department of the Imperial Institute, of the constituents of the various species and varieties of Aconite, with particular reference to those which are indigenous to India. All these plants have been medicinally employed, whilst some of them are highly poisonous.

The best known member of the group is Monkshood, or Wolf's Bane (*Aconitum Napellus*). This familiar garden plant is used medicinally both in Europe and in India, the chief supply for this purpose being at present derived from Germany. The principal constituent of the plant is the alkaloid aconitine, one of the most poisonous of all the vegetable alkaloids. Aconitine, its salts and derivatives, have been fully investigated by Professor Dunstan and his assistants, and the results have been described in a series of papers published in the Journal of the Chemical Society, to which has been recently added an account of the alkaloid (atisine) obtained from the non-poisonous *Aconitum heterophyllum* of India.

The Journal of the Chemical Society for March includes a paper by Professor Dunstan and Mr. F. H. Carr (the Salters' Company's Research Fellow in the Laboratories of the Imperial Institute), in which a full account is given of the poisonous alkaloid contained in the aconite of Nepaul, the "bish" or "bikh" of the Indian bazaars, which is for India the most important of all the aconites. The plant, usually described as *Aconitum ferox*, grows abundantly in the Himalayas. It has been extensively used in Indian medicine, and is known to be highly poisonous, its medicinal action being very similar to that of *Aconitum Napellus*.

The properties of the alkaloid called pseudaconitine may be briefly alluded to here. The alkaloid itself is crystalline and differs in composition from aconitine; the crystals, however, are very similar in form to those of this alkaloid, so much so that the two substances may perhaps prove to be isomorphous. The salts of pseudaconitine have been carefully examined; most of them crystallize well, and their properties are shown to differ from those of the salts of aconitine. When the alkaloid is heated until it melts, acetic acid is given off, leaving a new alkaloid which has been named pyropseudaconitine. This is a very bitter substance, but is not poisonous.

When heated with water, alkalis, or acids, pseudaconitine suffers hydrolysis. Acetic acid is first split off, leaving an alkaloid named veratrylpseudaconine, the properties of which have been fully described. Veratrylpseudaconine is bitter, but not poisonous. On further hydrolysis this alkaloid breaks up into dimethyl-protocatechuic or veratric acid, and an alkaloid pseudaconine, which is likewise non-poisonous.

From a preliminary study of the physiological action of pseudaconitine made by Dr. F. W. Tunnicliffe, of St. Bartholomew's Hospital, it appears to behave very like aconitine, but is probably rather more poisonous.

It has therefore been shown that whilst there is a very close similarity between the aconitine from *Aconitum Napellus* and the pseudaconitine from *Aconitum ferox*, they are physically and chemically distinct alkaloids, differing both in composition and structure. From the latter point of view, one important difference is the fact that in pseudaconitine the benzoic group of aconitine is replaced by a veratric group. The chemical work of isolating, examining and comparing the alkaloids of the different varieties of aconite is now in active progress in the laboratories of the Imperial Institute, and it is being followed up on the medical side by a determination of the physiological action of each alkaloid.

[Journ. Imp. Inst., 3, p. 153.]

The "Shinia" Leaves of Cyprus.

A dispatch has been recently received from the Chief Secretary of Cyprus enclosing translations of pamphlets by M. P. Gennadius, Director of Agriculture in that island, on the industry connected with the cultivation of the shinia and laurel shrubs. *Pistacia lentiscus* is a shrub that grows abundantly in most parts of Cyprus and is called in the island "shinia"; a variety of this shinia is the mastic shrub of Schio, the leaves only of

which have a commercial value, serving as a tanning and painting material. From the wood of the shrub charcoal of good quality is made, and from its seed, which is eaten by goats and pigs, oil can be extracted, which is fit, not only for burning purposes, but, in case of necessity, for food as well. For some time shinia leaves were exported from Cyprus to England in small quantities by the Cyprus Company, but the principal market for shinia leaves is Palermo, in Sicily, to which port there is an annual exportation from Tunis of 10,000 tons; they are there used chiefly for the adulteration of sumach (*Rhus coriaria*), which is grown in large quantities in Sicily and is thence exported to England and France. A good quality of shinia leaves is also consumed at Lyons as a dyeing material for silk stuffs.

The crop is gathered during the months of April to September, the leafy branches of the shrub being cut off, laid in heaps on the ground and left there until dry. This takes place generally in four or five days, during which the heaps are left undisturbed, in order that as few leaves as possible should come in direct contact with the sun, which bleaches and overdries them and thus depreciates their value. After being dried the branches are beaten with a flail to detach the leaves, which are then packed in sacks for the market. Before the beating takes place the top branches which cover each heap are removed and thrown away, because the leaves of these, having been bleached and burned up by the sun, are not only useless, but also injurious when mixed with the rest of the produce. Shinia leaves should not be gathered after rain, as an inferior quality is then obtained.

Another shrub, the laurel of Apollo, *Laurus nobilis*, is a most useful plant, its wood, leaves and fruit being all available for various purposes. The wood, although not very strong, serves, nevertheless, for structural purposes and cabinet-making; it is also used for fuel. The fruit resembles small olives and when pressed yields a greenish oil as thick as butter, and exhaling a strong, pleasant odor. This oil, well known to commerce as "laurel oil," is used in pharmacy and in perfumery, and is a protective against insects. The leaves serve as seasoning for cooked or preserved meats and fish, for which purpose they are dried and sold or are exported to other countries where the tree itself will not flourish. A considerable exportation of laurel leaves from Greece and the East is annually made to Austria (through Trieste) and the United States of America (through New York). The leaves are also used for packing with choice kinds of raisins and figs, in order to impart to those fruits the fragrance of the laurel oil, as well as to protect them against injurious insects. In veterinary surgery laurel leaves are considered to be an excellent external remedy against various cattle parasites, a decoction thereof being used for washing the parts of the animals most attacked by flies and other parasites. The laurel shrub is propagated only through its seeds, which are sown as fresh as possible direct in the soil and not in pots or boxes, as is the case with the seeds of some other plants. It prospers in a rather temperate soil, such as that of the southern range of the mountains of Cyprus, and, where soil and climate are suitable, will begin to bear fruit four or five years after the seed has been sown.

[Journ. Imp. Inst., 3, p. 155.]

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1° Fasciculo, 1888, pp. 230.
2° " Familia das Palmaceas, 1888, pp. 199.
3° " Familias das Cyclanthaceas até Gramineas, 1890, pp. 200–368.
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Reviews.

Praktischer Leitfaden der Gewichtsanalyse. Von Dr. Paul Jannasch a. o. Professor der Chemie an der Universität Heidelberg. Ein Bd., pp. XII, 314, mit zahlreichen Abbildungen im Text. Verlag von Veit & Comp., Leipzig. 1897. M. 6.50.

This book is not an exhaustive treatise on gravimetric quantitative chemical analysis, neither is it a mere outline; it is to serve as a well tested mediator and guide. In addition to the most common and tried methods the author desired to bring together his own methods and experiences. It becomes evident from the first pages that the book is not only written from the standpoint of the analytical chemist, but primarily from that of the teacher.

Since in quantitative chemical analysis so much depends upon the technique, the author begins with substances that call for manipulations of the simplest kind. These he explains at great detail and even indicates where in his opinion the instructor should go through the manipulation for the student, so that there may be no misunderstanding about the minutest detail. He evidently is a firm believer that the necessary care and neatness in analytical work is not acquired by intuition, but by painstaking and thorough instruction.

From the simpler substances he passes to more complex ones, giving special attention, in the latter part of the book, to the analysis of silicates. Although at the beginning the author seems to touch upon even the minutest detail, he does not appear to be gnilty of unnecessary repetition. In numerous instances he, however, refers to the originals in journals and chemical treatises, thus supplementing the information contained in the text.

The present volume, which even at first sight makes a very favorable impression, is to be followed by one on volumetric analysis, which will, no doubt, be anticipated with considerable interest by all who have an opportunity to see the first part. The bookwork also is exceedingly neat for a treatise of this kind. *E. K.*

Das Pflanzenreich. Ein Handbuch für den Selbstunterricht für alle Pflanzenfreunde. Bearbeitet von Professor Dr. K. Schumann, Kustos am Königl. Botanischen Museum zu Berlin und Privatdocent, und Dr. E. Gilg, Assistent am Königl. Botanischen Garten zu Berlin und Privatdocent. Ueber 500 Abbildungen im Text, 6 Tafeln in Farbendruck. Geheftet 6 M., gebunden 7.50 M. Verlag von J. Neumann, Neudamm. 1897.

In these days when the line between the once contrasted terms scientific and practical is rapidly being erased, when the generalizations reached by the scientist serve to indicate points capable of adaptation to the purposes of our every-day existence, it is hardly correct longer to regard the scientist as impractical and the practical man as other than an investigator of special cases in some branch of science. It, therefore, has come about that the significance of science is daily being more widely recognized and a knowledge of at least the rudiments of its several branches has come to be regarded as necessary. This increasing popular attention to the sciences has brought with it an increasing demand for works presenting the fundamentals in a clear, untechnical manner. Perhaps in this respect, Germany, "the schoolmistress of the world," leads in the number and high character of her popular scientific works. This line of public education is not left to the ill-trained or to the mercenary, but is undertaken by scientists of high rank.

If one may judge by a single volume, a series of popular works along the most prominent lines published by J. Neumann, now in part already in the hands of the public, belongs to this class. Volume VII of this series, called *Der Hausschatz des Wissens*, dealing with botany, is a substantial volume of about 850 pages, illustrated by a profusion of illustrations generally excellent. The authors, docents in the University of Berlin, are men of established reputation as botanists and their names are a guarantee for the quality of the work.

The plant kingdom here spread out before the reader is that seen by a systematic botanist. This is probably to be commended, since the relationships of plants in general appeal more strongly to the public than their structure or their mode of living. The book opens with a brief and very interestingly written introduction by Dr. Schumann on the history of botany. Dr. Gilg follows with a brief account of the salient features of the anatomy and physiology of plants. The main body of the work is occupied by a systematic account of the vegetable kingdom, in which Dr. Gilg treats of the Cryptogams and Dr. Schumann of the Phanerogams. The botanical system followed is that of Engler.

Although a popular treatise on botany, there is much of thoroughness in the book. The *Myxomycetes*, slime moulds, occupy over thirteen pages and are illustrated by six figures, all after those of Engler and Prantl's monumental *Pflanzenfamilien*, now nearing its completion. The Bacteria also receive a very satisfactory treatment. An historical sketch of the development of our present knowledge and theories concerning bacteria and their activities is followed by a discussion of the morphology, physiology and systematics of this group. Their relation to disease and their economic significance are treated in the light of the latest investigations. But a detailed discussion of the various excellences of the work is out of the question. The higher fungi, in addition to ample text and cuts, are illustrated by two colored plates, one each of the poisonous and of the edible species.

Dr. Schumann's treatment of the Phanerogams, while that of the systematist, lacks that dryness which is sometimes associated with works on plant classification. In addition to descriptions of the various groups and of especially important species, a wealth of information on the uses of plants, medicinal and otherwise, is included. Bits of historical and economic information relieve the mass of descriptive material. An abundance of good illustrations enhances greatly the usefulness of this section of the book. These are in large part drawn from medicinal plants and are not available in the usual text-books on materia medica. For its illustrations alone the book deserves a place in the pharmaceutical library.

In one point, in the writer's opinion, the usefulness of this book might have been materially enhanced. Had the names of the authors accompanied the botanical names cited, many opportunities for confusion might have been avoided. Presumably, the popular character of the work was in the authors' minds the ground of justification of the omission. Especially in a work intended for reference, as this avowedly is, no ordinary measures in the interest of clearness would seem superfluous.

This book deserves to instruct non-technical readers and will doubtless be welcome to many botanists. The ample index makes readily available the large amount of information contained, and in any library this would be a much used book. The writer knows of no work of similar scope and character in the English language.

Rodney H. True.

Einführung in das Studium der Alkaloide mit besonderer Berücksichtigung der vegetabilischen Alkaloide und der Ptomaïne. Von Dr. Icilio Guareschi. Mit Genehmigung des Verfassers in deutscher Bearbeitung herausgegeben von Dr. Hermann Kunz-Krause. Zweite Hälfte (Schluss des Werkes). P. Gaertner's Verlagsbuchhandlung, Berlin. 1897.

No doubt, most persons remember with what intense pleasure they spent an hour or two at a time in their mother's lumber chamber, located possibly in the attic of an old homestead. Though to other persons it had none of the advantages of the parlor or the library, yet to the boy of the house it had its peculiar charms, especially if it was rich in relics of a past generation. Somehow the stories in the coverless books and even in the stray old newspapers possessed more fascination than those which in elegant binding paraded on the shelves of the library below. They were veritable treasures compared with those exposed to the gaze of every guest or visitor.

Chemistry also has its lumber chambers and to the systematic chemist they are ofttimes very troublesome. Yet they also have their charms. The groups of the alkaloids, ptomaïnes, leucomaïnes and of other ines constitute such lumber chambers. Fortunately for science and for the student of chemistry these lumber chambers are constantly diminishing. As the constitution of alkaloid after alkaloid becomes known, is is taken out of the chemical lumber chambers and placed with other compounds with which it is structurally closely related. Once in its place, it seems to lose its individuality. It no longer stands out boldly as an individual, but has become a member of a series, a link in a chain, and is merely treated as such, however interesting a link it may be.

Whereas this is truly fortunate, many if not most chemical students like to spend some time at least in these lumber chambers—even if it is for the purpose of bringing partial order into chaos—and on the whole do not regret that new discoveries, especially in the vegetable and animal worlds, constantly add more material.

Although it was announced at the time of the appearance of the first half of this monograph, that groups four and five, dealing with the alkaloids proper and ptomaïnes, were only of a temporary nature; and that as soon as the constitution of these substances became known they would be classified with the numerous series of open chained and closed chained nitrogen derivatives of parts one and two respectively, the second half of the book is fully as interesting and valuable as the first part. Indeed, to most pharmacists, who have not made an extensive study of organic chemistry, the second part now before us will, no doubt, be even more interesting than the first.

The general character of the work was described on p. 39 of this journal. The second half takes

up the bases with closed chains; the group comprised by the term alkaloids; and group five treating of ptomaïnes and leucomaïnes. There is also an appendix containing additions to the text. In some instances information from journals of the present year is recorded, thus bringing it fully up to date. The book closes with a detailed table of contents and last but not least, with a twenty page double column alphabetical index. This makes the book exceedingly valuable for reference.

The treatise is not exhaustive. This, however, is not intended as criticism, for the authors intend it to be an "introduction into the study of alkaloids," using this term in its broadest sense. As such it is exceedingly valuable and for most persons will also serve admirably as a reference work. The praise bestowed upon it at the time of the appearance of the first part it has fully merited. It should find a place in every well equipped pharmaceutical and chemical library.

E. K.

Gesammelte Schriften von Eilhard Mitscherlich. Lebensbild, Briefwechsel und Abhandlungen. Mit den Heliogravüren von Mitscherlich und Berzelius, und 85 Textabbildungen und 10 Steindrucktafeln. Herausgegeben von Dr. Alexander Mitscherlich, Prof. der Chemie an der Universität zu Freiburg. Verlag von E. S. Mittler & Sohn, Königl. Hofbuchhandlung in Berlin. 1896. $4.60.

Eilhard Mitscherlich, as stated on several occasions in the pages of this journal (vol. 12, p. 29, vol. 13, pp. 13 and 146), was one of the founders of modern chemistry and the *facile princeps* of chemistry in the glorious galaxy of the intellectual and scientific peers of the young university of Berlin during its first decades. He had first studied philology and oriental languages, subsequently medicine, and this study led him to physics and chemistry, and in 1819 as a private student into the laboratory of the foremost master of chemistry at his time, Jacob Berzelius in Stockholm. On his return to Berlin in 1822, Mitscherlich became on the proposition of his later friends Alexander von Humboldt and Jac. Berzelius the successor of Klaproth in the chair of chemistry at the university of Berlin, which he occupied until his death, August 28, 1863. His most important accomplishments are, as well known, the discovery of the laws of isomorphism and dimorphism, and of the relations between crystallization and chemical constitution, and the discovery and study of benzol and its derivatives, whereby he opened the path to the vast domain of hydrocarbons and the aromatic compounds leading to the discovery and the perfection of the so-called aniline colors.

As briefly described on p. 13, vol. 13 of the "Rundschau," a beautiful bronze statue of Mitscherlich was erected on the campus of the University of Berlin on Dec. 31, 1894, which in conjunction with similar monuments of his contemporaries, Berzelius in Stockholm, Wöhler in Göttingen, and Liebig in Giessen and München, proclaim to coming generations the memory of these chief founders of modern chemistry.

A not less enduring monument has recently been set to the memory of the great chemical philosopher by the collection and publication of his miscellaneous scientific papers, academic orations and part of his correspondence with Berzelius and other scientists, published by his son in the above named compilation.

Besides Mitscherlich's classical text-book of chemistry, first published in 1829 to 1835, this compilation contains a reproduction of his most important scientific papers scattered through various journals and academic publications, part of his correspondence with Berzelius and others. It also contains a brief biography of Mitscherlich and, at the conclusion, the oration of Prof. Ostwald of Leipzig at the dedication of the Mitscherlich statue at Berlin in December 1894.

This book, embracing 678 large octavo pages, is an important adjunct to the Prof. Ostwald's well-known series of "Klassiker der exacten Wissenschaften," published some years since by Wilhelm Engelmann in Leipzig (Rundschau, vol. 11, p. 149), as well as to the recently published correspondence between Liebig and Wöhlen and Liebig and Berzelius, and to the well known "Reminiscences of contemporary friends" by A. W. von Hofmann.

The book is of excellent make-up with two heliogravures of Mitscherlich in his youth and in advanced years, and of Berzelius at the time when Mitscherlich was his student. It forms a valuable addition to the literature of the history of chemistry as well as to every university or college and private library, and will certainty be a most tender reminder of the great and ingenious professor and examiner to those who have been among his students and are still living at home and abroad.

Fr. H.

Meyer's Conversations-Lexicon. Ein Nachschlagebuch des allgemeinen Wissens. Fünfte gänzlich neubearbeitete Auflage. Mit ungefähr 10,000 Abbildungen im Texte und über 1000 Bildertafeln, Karten und Plänen. 14. Band, 1076 Seiten (Politik—Russisches Reich). — 15. Band, 1060 Seiten (Russ. Reich—Sirte). Bibliographisches Institut, Leipzig. 1897.

Man hat das Conversations-Lexicon vielfach als den Gradmesser der heutigen Kultur bezeichnet. Das ist richtig, soweit man von der Bearbeitung eines solchen Werkes voraussetzen darf, dass sie dem einzelnen Gegenstand unter Berücksichtigung der herrschenden Strömung gerecht wird, seine Bedeutung von der gesammten geistigen Bewegung auf jenem Gebiete ableitet und so ein Spiegelbild menschlicher Forschung und Thätigkeit schafft, das vollen Einblick gewährt in die Entstehung, Gestaltung und Ausbreitung jeder Wissensfrage bis auf die Gegenwart. Es muss zugestanden werden, dass das Meyer'sche Werk diesen Anforderungen vollkommen entspricht. Es unterrichtet über die älteren Forschungen mit derselben erschöpfenden Gründlichkeit, mit welcher es den Ereignissen der Gegenwart auf Schritt und Tritt folgt. Dies und die hervorragende Stellung dieses Lexicons in der encyclopädischen Literatur unserer Zeit bekunden die vorliegenden, wie alle zuvorgegangenen Bände. Dieselben umfassen der alphabetischen Reihenfolge nach auch auf wissenschaftlichen Gebieten ein reichhaltiges Material mit einer grossen Anzahl Farbendruck-Illustrationen, Karten und Plänen, die sich durch mustergültige Naturtreue und Schönheit auszeichnen.

Text wie Illustrationen und kartographisches Material bekunden durchweg die völlige Neubearbeitung des ganzen Werkes und stellen dasselbe in jeder Weise auf die Höhe unserer Zeit und der gesammten einschlägigen Literatur. *Fr. H.*

Des Acanthacées Médicinales. Thèse pour l'obtention du diplome de pharmacien de 1re classe, par Georges Dethan, Paris. Imprimerie F. Jourdan. 1896.

M. Dethan in a pamphlet of 192 pages, illustrated by 44 figures in the text, discusses the species of the order *Acanthaceæ* used in medicine. In the general part of the thesis, the history, geographic distribution and general morphology of the order are briefly treated. The types of structure, both normal and anomalous (*Thunbergia*, *Mendoncia* and *Acanthus*), the form and distribution of the cystoliths, so characteristic of this family, and the raphides are described. The various systematic dispositions of the members of the order, as made by Jussieu, Nees, Bentham and Hooker and Lindau, are cited and that of Bentham and Hooker adopted.

The second part deals with the individual genera and species. Habitat, synonomy, vernacular names, structural characteristics and uses are given. In a few cases, chemical information is included. The main emphasis seems to be laid on the anatomical studies. Many interesting details in this unusually interesting group of plants are developed. For these, the reader must seek the original. *Rodney H. True.*

Helfenberger Annalen 1896. Erster Band des zweiten Dezenniums. Im Auftrage der chemischen Fabrik in Helfenberg bei Dresden Eugen Dieterich herausgegeben von Dr. Karl Dieterich, Mitinhaber der Firma. Ein Bd., pp. 415. 1897. M. 3.00.

A considerable number of German factories publish annuals, semi-annuals or quarterlies, which are semi-commercial, semi-scientific in character. They frequently contain very valuable information along both lines and are of permanent value. The Helfenberger Annalen constitute such an annual. For ten years this annual has been edited by the founder of the firm, the well-known author of Dieterich's Manual. With the second decennium his son has assumed editorship. The first volume of this decennium, for the former pamphlet has grown into a formidable octavo volume of over four hundred pages, now lies before us. The first part contains the original contributions, which emenated from the research laboratory of this factory, most of which have already appeared in the German pharmaceutical journals. Several, however, are published for the first time. This part constitutes almost three-fourths of the volume. The second part consists of a compilation of methods of examination of crude drugs and preparations made from the former numbers of the Annalen since 1886 and brought up to date. Part three is entitled Electrotechnical Communications and constitutes a new feature of the Annalen.

E. K.

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The Kaiser Wilhelm's University of Strassburg.

A brief historical sketch of its development and the celebration of its twenty-fifth anniversary.

By *Frederick B. Power*, Ph. D., F. C. S.

In the early days of May, and favored by bright skies and all the freshness and beauty of spring time, the Kaiser Wilhelm's University of Strassburg celebrated its silver jubilee. From near and from far large numbers of the former students of the university made pilgrimages to the shrine of their *alma mater*, in order to give expression to their homage and devotion and to renew once again cherished associations, while large delegations of student organizations from nearly all the universities throughout the empire united in bringing to their younger sister — the "Wilhelma Argentinensis" — their personal greetings and tributes of congratulation.

For those, however, who will discern the true significance of this celebration, it will not suffice to simply look back over the short space of a quarter of a century to the time when the new German University was organized, or to consider only its grand development in the intervening years, but a glance must also be cast upon those remote days when in the old free imperial city of Germany a stronghold of science was erected, which was to serve as the intellectual centre of Alsace, and which was destined to play so important a part in the struggle for freedom of thought and the promotion of mental culture.

It was, indeed, on May 1, 1667, or 230 years ago, that Strassburg was the scene of a celebration similar, although naturally on a scale incomparably smaller and less grand, in its character, to that of the present year, for it was designed to commemorate the one hundredth anniversary of the academy, to which the Emperor Maximilian II had, in the year 1566, granted its philosophical faculty the right to confer degrees, although it was first opened on May 1, 1567, and to which Ferdinand II, in 1621, gave the name and the rights of an university.

The history of the old Strassburg University shows that it was a product of the religious movement of the sixteenth century, and in that spirit of humanism, which was of so much importance to Alsace, it continued to develop and to exercise a beneficent activity until it fell a sacrifice to the oppression and the reaction produced by the French Revolution.

The actual and chief embodiment of the spirit from which the Strassburg University emanated, was the statesman Jacob Sturm, of Sturmeck, who was termed by Grasmus "the incomparable". At the beginning of the Reformation, educational institutions suffered many vicissitudes. Many of the convent schools were closed, and nothing was done to replace them by others. This subsequently gave rise, however, to the common or public school (Volksschule), which must be regarded as a true offspring of the Reformation, and it was due to Jacob Sturm that one of these was founded in Strassburg as early as 1525. In this school

reading and writing were taught, and the New Testament and the Roman history of Livius were read in a German translation. As it is recorded "he wished to implant christianity and the Roman virtues in the hearts of the youth of the city." At the same time, besides providing for the elementary instruction of children, an improvement was effected in the Latin schools, of which three existed, where Greek, Latin and Music, as also Hebrew and Theology, were taught.

In about the year 1530, Jacob Sturm and Butzer also established a higher theological school, for the maintenance of which many cities of southern Germany contributed, and which constituted the beginning of the later university. It was first, however, in 1536 that these higher institutions of learning received systematic organization and were brought together as an organic entity and conducted under the able direction of Johannes Sturm, a man of broad culture, who was called from Paris for this purpose. The plan of instruction of this new school included Greek, Hebrew, Mathematics, and other subjects, and the professors also became connected with the Church of St. Thomas, by means of which they were able to essentially improve their material position. Foreign scholars of reputation who passed through Strassburg also delivered lectures, and the toleration and hospitality which that city tendered to those men of intellectual capacity who had either suffered persecution or had been banished from France, Italy and other countries was rewarded by service rendered to its schools. In 1538, the number of French fugitives was so great that a special religious service was held for them, and it was in fact no less a man than Calvin who first conducted this service, and who otherwise during the three years of his residence took a most active part in the scientific and religious life of the town.

In May 1538, the school formed from the combined Latin schools then existing was opened as a gymnasium, and its first rector was Johannes Sturm. Slowly but steadily its development continued in spite of all opposition, and without being influenced by the storms of religious dissensions, which were so disastrous to the reform movement, until in 1566 a bold step forward was taken and the gymnasium became expanded into an academy, or, as it was termed, an incomplete university with limited rights; for it still possessed no proper jurisdiction and had no professorship for canonical law. The intellectual life of the institution at this time was very active, for at the celebration of festivals of the academy stirring representations of Roman history were given on the *Forum romanum*, and on St. John's Day the dramatic poems of Plautus and Terence, of Sophocles, Euripides and Aristophanes were artistically presented in the beautiful theatre of the academy, which was also the first established theatre of Germany. These were much appreciated and enjoyed, not only by the scholars of the time and by professors and students, but also by the humbler citizens, for the latter, on account of the large amount of literature which was issued at Strassburg in the form of translations, had also become acquainted with the ancient classics and inspired with the free life of the old Greeks and Romans.

The further progress of the academy was for a time much impeded by a religious opposition to its free spirit, which caused the rector to be removed from office and delayed the project of converting the academy into a complete university. In the year 1594, King Rudolph II had indeed permitted the professors of medicine and of law to grant the lower degrees, but no use was made of this privilege on account of the exclusion of the theologians, who found no favor with the King. It was therefore first in 1621 that the city was granted a complete university, and on August 14 of that year the festivities of its inauguration began, which were continued for eight days with great pomp. The storms of war, which for three decades had devastated Germany, now again arose and obstructed the further development of its scientific life. On May 1, 1667, as already noted, the centennial jubilee of the university was celebrated, but Strassburg was compelled to share the fate of Alsace, and by the act of capitulation effected on September 30, 1681, the city was separated from the German Empire and placed under the protection of the King of France. This act, however, embodied the assurance that the King should permit the university to retain the character which it at that time possessed. It was thus recognized on the part of the French as a stronghold of German thought, German science, German customs, and the German language, although they were jealous of the freedom which its independent position gave it. Three branches, history, medicine and the science of government, attained a special development, and exercised a remarkable influence upon the culture of the entire century.

In the year 1738, there was established at Strassburg the first school of theoretical and practical gynaecology, in which were educated the most eminent gynaecologists of Germany, Switzerland, Holland and the North. The foundation of a maternity hospital, a botanical garden, and a cabinet of natural history also took place at this period, and in 1773 there already existed an astronomical observatory. The library, the beginnings of which dated from the time of the Reformation and from the donations of Jacob Sturm, was likewise increased, especially by the rich legacy of the celebrated historian Johann Schöpflin, of whom Goethe has expressed his admiration in the

poem "Dichtung und Wahrheit." Teachers of modern languages were appointed, and in order to attract rich and prominent students, a riding school was established. Such was the reputation imparted to the university by Schöpflin and by the teacher of state rights — Wilhelm Koch — that in Germany and France, and even in Russia, those young men were preferably selected for offices of diplomacy and instruction who had been trained at Strassburg.

The more, however, the French element expanded in Alsace and in Strassburg, and, since the middle of the eighteenth century, the more the French language also began to replace the German, the greater were the efforts of the French Government to obtain influence over the university. But such an attempt was repulsed by a memorandum of the teaching staff, in which it was emphasized that the university was dependent only on the chief magistrate, and that "in consideration of its constitution, as also especially in view of its relations with the other celebrated universities of Germany, it must be regarded as a German and a protestant university." It was specified in the very cleverly constructed act of incorporation that it would be a great political mistake if the previously adopted methods of instruction, which had been so fruitful in results, should become gradually changed and arranged to suit the taste of a French university. Thus the management of the old German university in Alsace remained secure until the time of the French Revolution, notwithstanding the mighty political storms, which swept over the land.

From this period onward the names of the most celebrated scholars were associated with Strassburg university, and their fame was extended not only throughout Germany, but to adjacent countries. The sons of noblemen and many German princes were attracted thither, and many of these afterward became prominent as statesmen and diplomats in Germany and Austria. Thus in the years 1785—1787 among the young people of high rank in attendance at the university there were, besides 17 Germans, 16 Frenchmen, 23 Englishmen and Scotchmen, 11 Danes and Swedes, 5 from the electoral dominions and Poland, and 44 Russians. Most prominent of all these was Goethe, who was matriculated on April 18, 1770, and whose inscription as a student of the university reads as follows: Johannes Wolfgang Goethe Moeno-Francofurtensis, with the appended note "logiere bey H. Schlag, auf dem Fischmarkt." The house thus referred to, in which he lodged, still remains and is designated by a suitably inscribed tablet. In an old publication of 1744 there occur the words: "Strassburg liebt die Musen und wird von den Musen geliebt" (Strassburg loves the Muses and is loved by them), and thus we find that Goethe in the poem "Dichtung und Wahrheit" has also rendered an enduring tribute of praise to the old Strassburg university.

That which the French Government was not able to accomplish on account of the firm resistance of the university corporation, was, however, finally effected by the events connected with the revolution. In the year 1793, three of the professors were arrested, and many others soon experienced the same fate. The catholic academy had previously been destroyed, the city library was closed, and in accordance with a decree of August 15, 1797, the protestant university, after a glorious existence of one hundred and fifty years, was finally compelled to close, as was also the protestant gymnasium. As a result of these events it is recorded that in the scientific circles of Alsace, and especially of Strassburg, there prevailed at that time "the solitude of a cemetery," for only scantily equipped primary schools were available for instruction, and in these the French language was made compulsory. It was the avowed purpose to attack "the Hydra of German culture and customs," as the university that had been allowed to remain in the midst of the French organizations was regarded, and it was therefore decreed that this should and must be killed.

Amid this devastation only the school of medicine was allowed to remain, as this was needed by the army. Under the consulate, and as tranquility and some degree of stability began to return in public affairs, a School of Pharmacy was also established. By a decree of Napoleon I, dated March 17, 1808, these were united with the gradually created faculties of theology, mathematics and natural science, and belles-lettres to form a higher institution of learning, which was known as the Académie imperiale. The protestant academy, which had again been revived, was known from this time on as the protestant seminary. Of the former teachers in the university only a few were drawn to the new French academy, which existed until the war with Germany in 1870, but which naturally was never able to attain again the significance and the influence which the old German university had possessed.

No sooner had it become an established fact that Alsace-Lorraine had again been made a German province, than everywhere the desire was expressed that the old university of its chief city should be restored. This was responded to the more willingly by the government from the fact that the wish was also shared by the Alsatians. The first one to give official expression to this idea was the Deputy von Treitschke, at that time a Heidelberg professor. In his speech in the German parliament on May 20, 1871, on the occasion of the consideration of the bill relating to the union of Alsace-Lorraine with the German Empire, he

said: "Above all else we wish to see the revival of the university on the frontier. The old province of the humanists — Alsace — should see again a flower of free science bloom in its chief city." A few days afterward a formal motion was made that the chancellor of the empire — Prince von Bismarck — should be commissioned to found a German university in Strassburg, and on December 11 of the same year Baron von Roggenbach, in Baden, was entrusted with the duty of its organization. This distinguished statesman gave expression to his purpose to create "a German university of the first rank, which should be a conservator of German science and a seat of culture worthy of the German spirit." As sufficient means stood at his disposal, the most eminent teachers were called to the new institution, and there were indeed many among those who filled the professonal chairs whose names were not only an ornament to the university, but to the sciences or departments of learning which they respectively represented. Many of these earlier teachers have since passed from the stage of human life and activity, but there are none whose memory will be more enduring or more reverently cherished by pharmaceutical students than that of the late lamented Professor Flückiger. That the natural sciences generally were well represented at the time of the re-organization of the university, is attested by such well known names as von Baeyer, afterwards succeeded by Fittig and Rose (Chemistry), Hoppe-Seyler (Physiological Chemistry), Schmiedeberg (Pharmacology), De Bary (Botany), Kundt (Physics), Groth (Mineralogy), etc., while the various other faculties were equally well equipped with talented teachers and investigators.

The buildings first occupied by the new university were those of the French academy, but others of great architectural beauty and much better adapted to the requirements of the various institutes were gradually constructed in the newer portion of the city, and these were dedicated in 1884. To those interested in the advancement of pharmaceutical science it is a matter of disappointment and regret that this department is the only one still unprovided with a new building, for it continues to occupy the very inadequate quarters of the old École de Pharmacie, where Pasteur taught nearly fifty years ago. The hope is entertained, however, that these requirements may also soon be appropriately met.

In the beginning of this brief historical sketch reference was made to the recent celebration of the twenty-fifth anniversary of the Kaiser Wilhelm's University, and it may be assumed that some account of the exercises and festivities connected therewith, which even extended over a period of four days, will not be devoid of interest. They were initiated on April 30, by a reception of the guests in the Civil Casino, and especially in the evening of the same day by a torchlight procession of the students. No better illustration could be given of the spirit which dominates the German Universities, and which has been aptly termed the *universitas universitatum*, than this grand spectacle presented. Although torchlight processions are not of such rare occurance as to be an altogether unfamiliar incident of German student life, and the older students of Strassburg will always retain a vivid recollection of a demonstration of this character in 1877, on the occasion of the dedication of the Strassburg University as the "Kaiser Wilhelm's Universität," when the venerable Emperor Wilhelm I, the lamented Crown Prince Friederich and Count von Moltke were its most honored guests, it may still be said that so imposing a scene of academic life had never before been witnessed in Strassburg, and perhaps in no other university town. Between 1600 and 1800 students, accompanied by many bands of music and mounted heralds, took part in this procession, which included delegations from the universities of Berlin, Bonn, Breslau, Erlangen, Freiburg, Giessen, Göttingen, Greifswald, Halle, Heidelberg, Leipzig, Jena, Marburg, Rostock, Tübingen, Würzburg, and from Basel and Zürich. This great body of students with their flaming torches, and the bright costumes of the various organizations with their banners and flags, were seen to the best advantage from the main building of the university, where a short halt was made in order that a deputation might be received by the rector. The brilliancy of the scene was further enhanced by powerful electric lights, which were directed upon the spire of the Cathedral and other prominent buildings. The line of march was subsequently taken up to the residence of the Governor of Alsace-Lorraine and through the principal streets of the town, which occupied 2½ hours, and the procession was finally brought to a close in the Cathedral square, where, during the singing of *Guadeamus igitur*, the burning torches were thrown together.

On May 1, the celebration found its chief and more serious expression in the so-called "Festact" or official ceremony, which took place in the Aula or grand central court of the main building of the university. In this palatial room, which was appropriately decorated, were assembled the present and former teachers and students of the university, prominent officials representing the empire, province, and municipality, the military and clergy, as also a committee of the deputies and other notables from the city and country at large, while on either side the auditorium was flanked by representatives of the various student corporations, arrayed in bright costumes and each bearing its standard of colors. The proceedings were opened by orchestral music, which included a specially

composed overture, the national hymn, and an allegro in which selections from the best known student melodies were interspersed, after which the vast assemblage was greeted in the name of the academical senate by the rector of the university. The state secretary, as the representative of the Governor, who was absent from the city, then delivered a congratulatory address from the German Emperor, who had signalized the anniversary by conferring upon the rector an official chain of office to be worn on all festal occasions, and with which he was formally decorated. This quite massive chain, of most exquisite workmanship, is composed of gold medallions, each of which is in some respect emblematic, while the general character of the whole is designed to typify the time of the dedication of the old Strassburg University in 1567. Addresses were then delivered by the rector, prorector, the mayor of Strassburg and others, after which many beautiful gifts commemorative of the jubilee, such as paintings, literary works, etc., were presented to the university by the faculty and by former students and friends. The rendering of a cantata by the academic glee club brought to an official close these impressive and inspiring ceremonies.

Of the various social entertainments provided for the occasion there need only be specially mentioned an excursion into the Vosges mountains on the last day of the festival. A large company of professors, students and guests, between 600 and 700 in number, were conveyed by a special train to Türkheim, from which point a pleasant walk through the forest let to a summit known as the "Drei Aehren," where a view over the Rhine valley and extending even to the snow-crowned peaks of the Alps disclosed a panorama of rare beauty and grandeur. It was, however, not only the delights of the surrounding landscape, but more especially the opportunity afforded for the intimate association of teachers and students, and the commingling of friends who had been long and distantly separated, that imparted to the day its peculiar charm and crowned it with its pleasantest memories.

The earlier poets had sung in latin verse *laudem Argentorati*, but those former students of the Kaiser Wilhelm's University who, after an absence of many years, have not only had the pleasure of visiting historic Strassburg and participating in the celebration of its jubilee, but who have received new inspiration from a revival of old associations with friends and teachers, can perhaps give no more fitting expression to their sentiment than in the verse written by Scheffel on the occasion of the dedication of the new university:

> Stosst an! Neu Strassburg soll leben,
> Soll wachsen und kraftvoll gedeih'n,
> Als Strasse für geistfrisches Streben
> Als Burg der Weisheit am Rhein!

London, June 1897.

ORIGINAL CONTRIBUTIONS.

Medicinal Plants of Brazil.*

By *Dr. Theodor Peckolt of Rio de Janeiro.*

Oreodaphne crassiramea Meissn. Dieser Baum kommt in den Staaten Minas und Rio de Janeiro vor und heisst *Canella branca* — weisser Zimmt.

Die Blätter sind verkehrt eirund oder länglich stumpf. Die endständige traubige Rispe trägt weisse, wohlriechende Blüthen. Das Decoct der Blätter dient als Thee und zu Einspritzungen bei Leucorrhœa. Das weisse, leichte Holz ist wenig geschätzt, wird höchstens zu Plafondbrettern benutzt und ist sehr der Beschädigung durch Termiten ausgesetzt. Sp. Gew. 0.824.

Oreodaphne spectabilis Meissn. Dieser grosse Baum mit niederhängenden Aesten kommt in dem Staate Goyaz vor, wo derselbe *Canella preta* — schwarzer Zimmt, benannt wird; in Minas, wo er als *Canella mescla* — mehrfarbiger Zimmt; und in Rio de Janeiro, wo er als *Canella barauna* — brauner Zimmt, bekannt ist.

Oreodaphne crassiramea Meissn. is found in the states Minas and Rio de Janeiro and is called *Canella branca* — white cinnamon.

The leaves are obovate or bluntly lanceolate. The terminal racemose panicle bears white, fragrant flowers. The decoction of the leaves is used as a tea and as injection in leucorrhœa. The light, white wood is little valued, is at the most used only for boards of ceilings and is much attacked by termites. Sp. gr. 0.824.

Oreodaphne spectabilis Meissn. This large tree with pendulous branches occurs in the state Goyaz where it is called *Canella preta* — black cinnamon; in Minas where it is known as *Canella mescla* — variegated cinnamon; and in Rio de Janeiro where it is called *Canella barauna* — brown cinnamon.

* Continued from p. 72. Translated for the Review by Dr. R. H. True, Asst. Prof. of Pharmacognosy at the University of Wisconsin.

Die Blätter sind gestreckt-länglich zugespitzt, glänzend, dunkelgrün. Die schirmtraubigen Rispen tragen kleine, gelbe, wohlriechende Blüthen. Die Beere ist länglich, 2 Ctm. lang, weich-spitzig, von gelber Farbe und nur bis ¼ von einer lockeren, gelbgrünen Achse umschlossen.

Die Rinde hat kein Aroma, wird jedoch als mildes Adstringens benutzt. Die Wurzelrinde ist von stark bitterem Geschmack und dient als Tonicum und gegen Diarrhœ. Das Holz ist dunkelbraun, sehr fest und dauerhaft gegen Witterungseinflüsse. Für Bäuten wird es hoch bezahlt. Sp. Gew. 0.988.

Oreodaphne splendens Meissn. findet sich in den Staaten Amazonas und Pará und heisst *Itauba preta* — schwarzes Steinholz, und *Cedro cinzento* — graue Ceder.

Es ist ein kolossaler Baum von 25 Meter Höhe bei 2 Meter Durchmesser, dessen dunkelfarbiges Holz als vorzügliches Material zu Schiff- und Häuserbau dient.

Als Volksmittel dienen die adstringirend wirkende Rinde und bitter schmeckende Wurzelrinde wie bei den Vorhergehenden.

Itauba preta und *Cedro preta* heisst auch **Oreodaphne Hookeriana** Meissn. in demselben Staate. Das Holz dieses hohen Baumes hat einen schwarzen Splint wie Ebenholz und wird als Ersatz desselben benutzt.

Oreodaphne Martiana Nees, var. **latifolia** Meissn. Dieser kleine, vielästige Baum ist im Staate Alagoas als *Amansa besta* — Eselzähmer bekannt.

Die grossen Blätter sind oval oder länglich elliptisch. Die kurzbefilzte Rispe trägt gelbe, schwachriechende Blüthen. Die kugelrunde Beere hat 1 Ctm. Durchmesser.

Die frische Rinde, wenn gestossen, entwickelt einen unangenehmen, penetranten Geruch. Die Gauchos, welche die wilden Esel zähmen, behaupten, dass wenn in einem Säckchen die frisch gestossene Rinde dem wilden Thiere vorgebunden wird, dasselbe sogleich beruhigt wird und in kurzer Zeit gezähmt werden kann. Das weisse, leichte, geruchlose Holz dient nur zur Anfertigung verschiedener häuslicher Geräthschaften.

Ein Bauholz, welches nicht der Witterung ausgesetzt werden darf, liefert der in Goyaz, S. Paulo und Minas vorkommende *Canella de Serra* — Gebirgszimmt,

Oreodaphne velutina Nees.

Oreodaphne acutifolia Nees kommt nur in den Südstaaten S. Paulo (südlich), Paranà, Santa Catharina und Rio Grande do Sul vor und heisst *Lauro branco* — weisser Lorbeer, *Lauro de Parana* und *Canella burra.*

Dies ist ein sehr hoher, starkstämmiger Baum und wird vorzugsweise zu Möbeln benutzt. Als Bauholz darf es nicht der Feuchtigkeit ausgesetzt werden. Die Bastrinde hat starkbitteren Geschmack und ist ein vielfach benutztes Magenmittel des Volkes. Dieselbe dient auch zur Bereitung eines bitteren Schnapses.

Oreodaphne bofo Neess. Dieser Baum wird im Staate Amazonas gefunden und ist als *Paó de guiabo* und als *Canella gosmeuta* — schleimiger Zimmt — bekannt. Er erreicht eine Höhe von 12 bis 16 Metern. Die grossen Blätter sind länglich, etwas zugespitzt. Der Blüthenstand besteht aus traubigen Rispen von 13 Cm. Höhe mit weissen flaumartigen Blüthen.

Die Bastrinde ist ungemein reich an Schleim. Mit Wasser macerirt bildet dieselbe einen dicken Schleim, wie die Früchte von *Hibiscus esculentus,*

The leaves are narrowly oblong, acuminate, shining, dark green. The umbellate-racemose panicles bear small, fragrant yellow flowers. The berry is oblong, 2 cm. long, weakly pointed, in color yellow and enclosed only about one-fourth by a loose, yellowish-green axis.

The bark has no aroma, is used, however, as a mild astringent. The root bark has a strongly bitter taste and serves as a tonic, also as a remedy for diarrhœa. The wood is dark brown, very firm and durable under the influence of the weather. It is highly valued for buildings. Sp. gr. 0.988.

Oreodaphne splendens Meissn. is found in the states Amazonas and Pará and is called *Itauba preta* — black stonewood, and *Cedro cinzento* — gray cedar.

It is a large tree of a height of 25 meters and a diameter of 2 meters. Its dark colored wood is an excellent material for the construction of ships and of houses.

The astringent bark and the bitter-tasting root bark provide popular remedies as in the foregoing.

Oreodaphne Hookeriana Meissn. is also called *Itauba preta* and *Cedro preto* in the same states. The wood of this tall tree has a black sap wood, like the ebony, and is used as a substitute for the same.

Oreodophne Martiana Nees. var. **latifolia** Meissn. This small, much branching tree is called in the state Alagoas *Amansa besta* — ass-tamer.

The large leaves are oval or oblong-elliptical. The shortly pubescent panicle bears yellow, faintly fragrant flowers. The spherical berry is a centimeter in diameter.

The fresh bark, when crushed, develops an unpleasant, penetrating odor. The gauchos who tame the wild asses assert that if in a small sack the freshly crushed bark is tied in front of the wild animal, it becomes immediately quiet and in a short time can be tamed. The white, light, odorless wood is used solely for making various domestic implements.

Oreodaphne velutina Nees. furnishes a building-wood, which should not be exposed to the action of the weather. It occurs in Goyaz, S. Paulo and Minas and is called *Canella da Serra* — mountain cinnamon.

Oreodaphne acutifolia Nees. occurs in the southern states S. Paulo (southern part), Paranà, Santa Catharina and Rio Grande do Sul, and is called *Lauro branco* — white laurel; *Lauro de Parana* and *Canella burra.*

It is a very tall, strong stemmed tree and is used mainly for furniture. As a building-wood it must not be exposed to moisture. The inner bark has a strongly bitter taste and is a stomach remedy much used among the people. It is also much used in the preparation of a bitter whisky.

Oreodaphne bofo Nees. This tree occurs in the state Amazonas and is known as *Paó de guiabo* and *Canella gosmenta* — mucilaginous cinnamon. It attains a height of from 12 to 16 meters. The large leaves are oblong, somewhat acuminate. The inflorescence consists of racemose panicles 13 cm. in height, with white, cottony flowers.

The bast of the bark is unusually rich in mucilage. When macerated with water, it forms a thick mucilage like the fruits of *Hibiscus escu-*

deshalb die Benennung. Das Decoct dient als Umschlag bei entzündeten Wunden. Die Indianer benutzen die Rinde als Antidot bei Schlangenbiss: die Rinde wird gekaut, und ebenfalls ein gekauter Brei auf die Bisswunde gelegt und in kurzen Zwischenräumen erneuert.

Das weissgraue, poröse Holz wird zu Pfafondbrettern benutzt.

Nectandra canescens Nees. In den Staaten S. Paulo, Minas, Rio de Janeiro bis zum Aequatorstaate Amazonas. In den drei erstbenannten Staaten heisst dieser Baum *Lauro sylvestre* — wilder Lorbeer —, in den Nordstaaten *Muscataia* und *Muscutaia.*

Der schlanke Baum erreicht eine Höhe von 15 Metern. Die jungen, weichen Blätter sind gelblich befilzt; nach vollständiger Entwickelung sind sie starr lederartig, gestreckt, länglich und lancettlich, schmal zugespitzt, oberseits glatt, unterseits rostfarben oder gelblich filzig. Die 10 Cm. hohe Rispe besteht aus weissen, befilzten, wohlriechenden Blüthen. Die Beere ist eiförmig, 13 mmtr. lang, bis zur Mitte von der becherförmigen Achse umhüllt; reif im April.

Die Rinde hat einen angenehmen, sassafras- und zimmtähnlichen Geruch und dient als Volksmittel bei Diarrhœ, Magenaffectionen etc.

Nectandra Schottii Meissn. In den Staaten Minas, Espirito Santo und Rio de Janeiro. In ersterem heisst derselbe *Lauro de Matto Virgem* — Urwald Lorbeer —; im zweiten *Catinga de negro* — Negergeruch —; hier *fructo de caxingle* — Eichhörnchenfrucht; der richtige Tupiname ist *cachingélé.*

Es ist ein kleiner schlanker Baum mit glatter Rinde. Die Blätter sind lederartig, langgestrecktlänglich, zugespitzt, oberseits glatt, unterseits befilzt. Die Blüthenrispe ist kurz, gedrängt blüthig. Die Blüthen sind rostfarben befilzt, von starkem Bocksgeruch. Die Beere ist klein, länglich, von rother Farbe, der dritte Theil vom Becher umgeben, reif im Februar. Dieselbe ist ein Lieblingsfressen der hiesigen Eichhörnchen, *Sciurus æstuarus* L.

Die Früchte sind stark aromatisch, etwas pichurimähnlich. Dieselben werden bei Kolik genommen und zwar gestossen als Magenpflaster. Die Tinctur ist officinell und wird in Dosen von 8 bis 10 Tropfen verabreicht und findet auch als Einreibung bei Rheumatismus Anwendung. Die lorbeerartig riechenden Blätter dienen als Ersatz der Lorbeerblätter.

Nectandra mollis Nees var. **villosa** Meissn. Dieser schöne Baum kommt in dem Gebiete von den Staaten Rio de Janeiro und Minas nördlich bis zum Amazonas-Staate vor und heisst *Canella massapé, Canella inbaiba, Embuia, Inhaiba, Lauro preto.* Die häufigste Benennung ist *Canella preto* — schwarzer Zimmt. Derselbe erreicht eine Höhe von 18 Metern und einen Durchmesser von 1½ Metern. Der Blüthenstand besteht aus achselständigen und endständigen Rispen mit befilzteu, heliotropähnlich riechenden Blüthen. Die Beere ist oval, gelb und bis zur Hälfte vom Becher umschlossen.

Die schwach aromatisch riechenden Blätter besitzen einen mild bitter-styptischen Geschmack. Der von denselben bereitete Thee dient als diureticum; eine Infusion von 30 Grm. zu 240 Grm. Colatur, Morgens und Abends genommen, bei menstrua suppressa; der mit Zuckerbranntwein bereitete Schnaps als Magenmittel.

Das Holz ist gelbbraun, nach längerer Zeit sich schwärzend, deshalb die Benennung. Es ist sehr

lentus, hence the above name. The decoction is used as a dressing for inflamed wounds. The Indians use the bark as an antidote for snakebite. The bark is chewed, and also the pasty mass obtained by chewing is bound to the wound. This is renewed at frequent intervals.

The grayish-white, porous wood is likewise used for boards for ceilings.

Nectandra canescens Nees. In the states S. Paulo, Minas, Rio de Janeiro to the equatorial state Amazonas. In the first three states named this tree is called *Lauro sylvestre* — wild laurel —, in the northern states *Muscataia* and *Muscutaia.*

The slender tree reaches a height of 15 meters. The young, soft leaves are yellowish-tomentose; when fully developed they are stiffly leathery, elongated oblong and lanceolate, narrowly acuminate, the upper surface smooth, under surface rusty or yellowish-tomentose. The panicle, 10 cm. tall, consists of white, tomentose, fragrant flowers. The berry is ovate, 13 mmtr. long, surrounded by the beaker-shaped axis to the middle; ripe in April.

The bark has an agreeable, sassafras- and cinnamon-like odor and is a popular remedy for diarrhœa, stomach troubles, etc.

Nectandra Schottii Meissn. In the states Minas, Espirito Santo and Rio de Janeiro. In the first, it is called *Lauro de Matto Virgem* — laurel of the primitive forest —; in the second *Catinga de negro* — negro odor —; here *fructo de caxingle* — squirrel fruit; the genuine Tupi name is *cachingélé:*

It is a small, slender tree with smooth bark. The leaves are leathery, elongated, oblong, acuminate, upper surface smooth, under side pubescent. The floral panicle is short, flowers crowded. The flowers are rust-colored, tomentose, of strong buck-odor. The berry is small, oblong, red, one-third enclosed in cupule, ripe in February. It is a favorite food of the Brazilian squirrels, *Sciurus æstuarus* L.

The fruits are strongly aromatic, somewhat like pichurim. They are given in colic and crushed as plaster for the abdomen. The tincture is official and is administered in doses of 8 to 10 drops and is also rubbed on externally in rheumatism. The leaves have a laurel-like odor and are used as a substitute for laurel leaves.

Nectandra mollis Nees var. **villosa** Meissn. This beautiful tree occurs in the region of the states Rio de Janeiro and Minas and northward to the state Amazonas, and is called *Canella massapé, Canella inbaiba, Embuia, Inhaiba, Lauro preto.* The commonest name is *Canella preto* — black cinnamon. It reaches a height of 18 meters and a diameter of 1½ meters. The inflorescence consists of axillary and terminal panicles of tomentose flowers, having an odor similar to that of heliotrope. The berry is oval, yellow and surrounded by the cupule to the middle.

The weakly aromatic leaves have a mild bitter-styptic taste. The tea prepared from them serves as a diuretic; an infusion of 30 grm. to 240 grm. of colature, taken at morning and evening, in menstrua suppressa; the liquor prepared with sugar brandy is used as a stomach remedy.

The wood is yellowish-brown, after a time becoming black, hence the name. It is very dur-

dauerhaft und fest und von allen mit *Canella* benannten Laurineen am meisten geschätzt. Es dient zu Bauten, besonders zu Fussbodenbrettern in den aristokratischen Wohnhäusern. Die davon bereiteten Möbel werden ebenso hoch bezahlt als Mahagoni und es gehört zur Eleganz einer Wohnung, dass die Möbel eines Esszimmers von diesem Holze angefertigt werden.

Nectandra leucantha Nees. Dieser Baum kommt in den Staaten Bahia, Espirito Santo, Minas, S. Paulo und Rio de Janero vor, und ist als *Canella secca* — trockener Zimmt —, *Canella mirim* — kleiner Zimmt —, *Carvalho secco* — trockene Eiche — bekannt.

Derselbe ist dünnstämmig, bis 10 Meter hoch, mit länglich-ovalen und lancettlichen Blättern. Die kurzen Blüthenrispen haben weisse, wohlriechende Blüthen mit gelbbefilztem Kelch. Die Beere ist hellgrün, länglich-oval, 27 Mmtr. hoch, zum dritten Theil vom Becher umgeben, welcher, wie auch der Fruchtstiel, carmoisinroth gefärbt ist.

Das Holz findet nur zur Anfertigung von Möbeln Verwendung. Die stark bitter schmeckende Wurzelrinde dient als magenstärkendes Mittel; ein Decoct von 20 Grm. zu 180 Grm. Colatur bei Diarrhœ. Die schwach aromatischen Früchte dienen gepulvert als Volksmittel bei Leucorrhöe. Dreimal täglich wird ein Theelöffelvoll genommen und als Einspritzung dient ein Absud der Blätter.

Gleiche Benutzung findet die var. **attenuata** Meissn., mit dem Volksnamen *Carvalho de capœira* — Gebüscheiche.

Nectandra Turbacensis Nees. Dieser hohe Baum kommt in den Staaten Pará and Amazonas vor und ist unter dem Volksnamen *Cigua* bekannt. Derselbe liefert ein vorzügliches Holz zu Schiffsbauten. Die runden Beeren haben Geruch und Geschmack wie Pichurim und werden vom Volke zu gleichen Zwecken benutzt.

Nectandra Rodici Rob. Schomb. Dieser Baum kommt in den Staaten Pará und Amazonas vor, doch ist sein hauptsächliches Gebiet Goyana. Die Brasilianer benennen den Baum *Canella limão* — Citronenzimmt, *Canella bibirú* und *Còraçâo verde* — grünes Herz; die Indianer *Sipiri*.

Die Beschreibung dieses kolossalen Baumes, sowie die Benutzung und Darstellung des im Jahre 1832 aus der Rinde von Dr. Rodie entdeckten Bebeerins findet sich in allen Werken ausführlich. Hier wird das Bebeerin von den Aerzten nie benutzt. Das sp. Gew. des vorzüglichen Holzes ist 1.600.

Nectandra Puchury maior Nees. Dieser Urwaldbaum kommt in dem Staate Amazonas an den Flüssen Rio Negro und Yúpurú, seltener an den Ufern des Amazonenstromes vor. Am Yúpurú heisst derselbe *Himilão*. Die Tupi nennen ihn *Puchury*, die Brasilianer *Pichurim* und *Fava Pichurim*.

Derselbe ist in allen wissenschaftlichen Werken hinreichend beschrieben und ist nur zu bedauern, dass dieses nützliche Gewächs mit der Zeit vollständig vernichtet wird, ohne dass auch nur ein Bewohner der Aequatorialzone daran dächte, denselben zu cultiviren. Es wäre selbst Pflicht der Regierung, diesen nutzbringenden Kulturzweig zu bewerkstelligen oder wenigstens zu unterstützen. Die Lauraceen entwickeln sich schneller als die Myrtaceen, Myristicaceen und Rubiaceen, so dass man in acht Jahren schon Früchte ernten könnte.

Die Indianer sammelten die reifen Früchte, welche einige Tage in kleine Haufen gelegt wurden, damit die fleischigen Fruchtschalen sich leichter lösten. Die Cotyledonen wurden mit trockenem

able and firm and is prized more than that of any of the *Lauraceæ* designated as *Canella*. It is used in buildings, especially as boards for floors in aristocratic residences. The furniture prepared from it is as expensive as even that of mahogany, and elegance in a residence demands that the furniture of the dining room be made of this wood.

Nectandra leucantha Nees. This tree is found in the states Bahia, Espirito Santo, Minas, S. Paulo and Rio de Janeiro and is known as *Canella secca* — dry cinnamon —, *Canella mirim* — small cinnamon —, *Carvalho secco* — dry oak.

It has a slender trunk, attains a height of 10 meters and bears oblong-oval and lanceolate leaves. The short floral panicles have white, fragrant flowers with yellow, tomentose calyx. The berry is bright green, oblong-oval, 27 mmtr. in length, one-third surrounded by the cupule which together with the fruit pedicel is crimson-red.

The wood is used only for making furniture. The very bitter rootbark is used to strengthen the stomach; a decoction of 20 grm. to 180 grm. of colature finds use in diarrhœa. The weakly aromatic fruits when pulverized furnish a popular remedy for leucorrhœa. A teaspoonful is given three times a day and a decoction of the leaves is used as an injection.

The var. **attenuata** Meissn. finds the same use and is known popularly as *Carvalho de capœira* — thicket oak.

Nectandra Turbacensis Nees. This tall tree occurs in the states Pará and Amazonas and is known by the popular name *Cigua*. It supplies an excellent timber for ship building. The round berries have odor and taste like pichurim and is used by the people for similar purposes.

Nectandra Rodici Rob. Schomb. This tree is found in the states Pará and Amazonas, but it occurs chiefly in Goyana. The Brazilians call the tree *Canella limão* — lemon cinnamon, *Canella bibirú* and *Còraçâo verde* — green heart; the Indians, *Sipiri*.

The detailed description of this large tree as well as the use and preparation from the bark of the principle bebeerin, discovered in 1832 by Dr. Rodie, is to be found in all works. Here, bebeerin is never used by the physicians. The sp. gr. of the excellent wood is 1.600.

Nectandra Puchury maior Nees. This member of the primitive forest occurs in the state Amazonas on the Rio Negro and Yúpurú Rivers, more rarely on the shores of the Amazon. On the Yúpurú, it is called *Himilão*. The Tupi call it *Puchury*, the Brazilians *Pichurim* and *Fava Pichurim*.

It is sufficiently described in all scientific works and it is to be regretted that this useful plant is being completely destroyed without a thought on the part of the inhabitants of the equatorial zone of cultivating it. It should be the duty of the government itself to inaugurate or at least support this profitable branch of industry. The *Lauraceæ* develop more rapidly than the *Myrtaceæ*, *Myristicaceæ* and *Rubiaceæ*, it being possible to secure fruit in as soon as eight years.

The Indians gathered the ripe fruit, which was laid for some days in small heaps in order that the fleshy fruit envelope should become more readily loosened. The cotyledons were rubbed off with

Grase abgerieben und auf Taquararohrhürden über gelindem Feuer getrocknet. Wenn die Sammler von Caoutschouc und Sassaparillawurzel im Urwalde diesen Baum fanden, statt die praktische Methode der Indianer zu befolgen, wurde der Baum umgehauen, um die Früchte zu sammeln, die zukünftigen Ernten zerstörend.

Im Jahre 1830 exportirte die Provinz Amazonas 1200 Arroben (1 Arroba = 15 Kilo), wofür per Arroba 16 Milreis bezahlt wurde. Im Jahre 1853 wurden nur 18 Arrobas exportirt, in 1855, 293 Arrobas; 1859, 61 Arrobas; 1860, 57 Arrobas, wofür in Pará per Arroba nur 7 Milreis erlangt wurden. Dieser Spottpreis entmuthigte wahrscheinlich die Sammler, denn von 1861 an kamen jährlich nur wenige Arrobas zum Export und jetzt gar nicht mehr. Im Jahre 1885 kaufte ich hier noch das Kilo zu 2 Milreis, dann stieg der Preis jährlich. Jetzt existirt nur noch ein sehr geringes Quantum am Platze und die Brasilianer verlangen 14 bis 20 Milreis per Kilo.

Rinde und Blätter besitzen ebenfalls stark aromatischen Geruch. Das Volk benutzt den Thee als excitans. Grossen Ruf haben die Bäder des Rindendecoctes bei Rheumatismus.

dry grass and dried over a gentle fire on Taquara reed wickers. When the collectors of caoutchouc and sarsaparilla roots in the virgin forests found this tree, instead of following the practical method of the Indians, they felled the tree in order to gather the fruits, thus cutting off future harvests.

In the year 1830, the province Amazonas exported 1200 arrobas (1 arroba = 15 kilos), receiving 16 milreis per arroba. In the year 1853, only 18 arrobas were exported; in 1855, 293 arrobas; 1859, 61 arrobas; 1860, 57 arrobas, for which but 7 milreis per arroba was received in Pará. This ridiculously low price probably discouraged the collectors, since from 1861 on, but few arrobas were exported yearly and now none at all. In the year 1885, I purchased here at 2 milreis per kilo. Since that date the price has risen yearly. Now but a small quantity exists and the Brazilians demand 14 to 20 milreis per kilo.

The bark and leaves have likewise a strongly aromatic odor. The people use the tea as a stimulant. Baths of the decoction of the bark enjoy a great reputation for rheumatism.

The Estimation of Menthol in Oil of Peppermint.

By Dr. *Clemens Kleber.*

In the American Journal of Pharmacy, vol. 69, p. 192, Mr. L. F. Kebler describes a modification of the method for estimating menthol in oil of peppermint as it had been suggested by Dr. F. Power and myself in 1894. This modification consists in acetylizing a weighed quantity of the oil and subsequent saponification of the product after washing and neutralizing it quantitatively, while we acetylize an arbitrary quantity and saponify an exactly weighed portion of the acetylized oil, after washing, drying and filtering the same. I have no doubt, that, if conducted with proper care, Kebler's method will yield exact results, but I want to mention, that when working out our method of estimation, we also took the method now proposed by Kebler into consideration, but found it less practical than the way described in our paper. Kebler says that according to his method the percentage of menthol can readily be estimated in three hours, while the original method requires the greater part of a day for execution. Against this I must state that in hundreds of estimations of menthol in oil peppermint, which we have performed since 1894, it never took us more than about 20—30 minutes to wash, neutralize and filter the acetylized oil since it is unnecessary to wait till the aqueous and oily layers are perfectly separated and since a small loss of oil is quite irrelevant, so that the whole washing and drying of the oil can be done while holding the separator in the hand, while in Kebler's modification any loss of oil must be carefully avoided, so that one has to wait until the aqueous solutions have become perfectly clear, which naturally requires much more time. Besides this, it must not be forgotten that peppermint oil is not quite insoluble in water, especially in that containing acetic acid as it results from the first washing, therefore small losses in Kebler's method are unavoidable.

A quick approximate estimation of menthol in peppermint oil can be made in the following way: About 5 gr. of peppermint oil (accurately weighed) are mixed, in a flask connected with a glass-ground condenser tube, with about 5 cc. acetic anhydride, accurately measured* and boiled for 30 minutes. In the meantime an equal quantity of the same acetic anhydride is titrated with normal caustic soda and phenolphtalein. After cooling the boiled liquid somewhat, the condenser is taken off and washed with some water, which is added to the acetylized mixture, and then the latter is titrated with normal caustic soda. The difference in the number of ccs. in both titrations multiplied by 0.156 gives the menthol in the oil used. An inconvenience of this method is that comparatively large quantities of normal solutions are required and that the desired number has to be calculated from the difference of both, which naturally makes the method less exact, but all of the operations can easily be performed in 50 minutes.

Laboratories of Fritzsche Brothers,
Garfield, N. J.

* For measuring exactly equal quantities of liquids we recommend the following way: Hold a common pipette, preferably one with a somewhat long narrow mouth, which has been filled exactly to the mark with the liquid to be measured, perpendicularly over the receiving flask and let it flow out. The liquid flows out in a stream which stops suddenly, it will then last a number of seconds until drops beginn to fall off from the mouth. If the pipette is put aside as soon as the continuous stream stops and before the drops appear, the quantities of liquid thus obtained will be alike with very great accuracy, but they are of course smaller than the quantity for which the pippete is gauged. In cases where only approximate, but in every case perfectly equal, quantities are desired, we have found this method of great value.

Cinnamic Acid from Styrax and Benzoic Acid from Benzoin.

By *Edo Claassen.*

Styrax is boiled for some time with an excess of a sodium carbonate solution in a copper or other suitable vessel and to the mixture when cold and without having been filtered, commercial hydrochloric acid is added in such a quantity as to show finally a faint but distinct alcaline reaction. The contents of the vessel are then heated again to the boiling point, filtered, when cold, and the residue on the filter washed with water. To the filtrate, concentrated by evaporation, if necessary, is now added a sufficient amount of hydrochloric acid, the precipitate collected on a filter and washed with a small quantity of cold water, after which operations it is dried and extracted with hot rectified benzin. This solution has, after cooling, deposited a considerable amount of cinnamic acid. The benzin is now poured off on the crude acid and the work of extracting repeated as long as it yields acid. In the benzin separated from the last crystallization there is yet left some acid, wherefore it may be shaken repeatedly with a diluted sodium carbonate solution. Hydrochloric acid precipitates from the latter the acid, which is then brought on a filter, washed with cold water and dried. The cinnamic acid obtained at first is very white; later on, the same, particularly that separated from the last sodium carbonate solution, may often be found to be yellowish, in which case it should be treated with benzin as above.

It is evident that the same process can be used to extract cinnamic acid from certain kinds of benzoin resin and benzoic acid from the common commercial benzoin as also the mixed acids from balsam of tolu.

Some Cuban Medical Plants.*

By *Robert Combs*, Asst. Prof. of Botany, Iowa State College, Ames, Iowa.

Urticaceae.

Cecropia peltata L. No. 111. "Yagruma hembra," Trumpet tree. Tropical America. The leaves of this tree have pectoral properties and are used in asthma. A proprietary preparation of Havana, having for its basis fluid extract of "Yagruma hembra," is called *Pectoral Antiasmatico* (Antiasthmic pectoral). Dr. Vildosola[5] reports an alkaloid obtained from the leaves of *Cecropia*, which he calls "cowleyina" in honor of Dr. Cowley of Havana.

The milky juice of many species of *Ficus* is used either as a nutritive, to prepare caoutchouc or to make "bird lime."

Some *Ficus* species have a poisonous juice.

* Continued from p. 112.

5 "Revista de Ciencias Medicas," Havana.

Amaryllideae.

Curculigo scorzonerœfolia Benth. No. 42. "Azafran cimarrón," Wild saffron. This little plant is an emmenagogue and is considered capable of producing abortion.

Palmae.

Cocos nucifera L. No. 615. "Coco," Coca nut. Original to tropical America, but naturalized throughout the tropics. The tree furnishes timber and fibre, besides the valuable and extensively exported coca nut. The saccharine liquid from the interior of the green nut, forming the milk of the ripe nut, is used as a refreshing drink. A wine is also made from it. An oil is expressed from the albumen of the ripe nut, which has been said to possess tænifuge properties (Dr. Martiales, Havana), but I believe this has not been verified.

The production and exportation of coca nuts forms an extensive industry in Cuba.

MONTHLY REVIEW.

Chemistry.

A New Acid from Cochineal.

Liebermann and Voswinckel have isolated from carmine an acid, cochenealic acid, to which the possible formula $C_{10}H_8O_7$ has been assigned with some reserve. With bromine water the crystalline tribrom derivative of kresotinic acid, $C_6H_3(CH_3)(OH)(CO_2H)$ is obtained. This is analogous to the nitrococcic acid obtained by the action of nitric acid on cochineal and recognized by Liebermann and van Dorp (Ber. 18, p. 3180) as trinitrokresotinic acid. [Ber. 30, p. 688.]

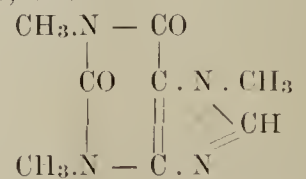
Thujone.

This ketone derived its name from the genus name *Thuja*, from an oil of which it was first obtained. Wallach found it besides fenchone in fennel oil and Semmler isolated it from tansy oil, hence the synonym tanacetone (from *Tanacetum*). Wallach, several months ago made a further report on the derivatives of this compound: Ueber die Verbindungen der Thujonreihe; and Tiemann and Semmler report: Ueber den Abbau von Tanacetketonsäure.

[Ber. 30, pp. 423 and 429.]

On the Constitution of Caffeïne and Related Compounds.

Emil Fischer has recently supplemented his preliminary notice made last year at the Frankfurt meeting of German Scientists and Physicians with regard to the constitution of caffeïne. The development of the caffeïne formula is traced and its relationship to other compounds pointed out. The experimental proof for the theoretical discussions of the first paper he intends to bring in a series of papers. For caffeïne he now adopts the formula suggested by Midicus more than twenty years ago, viz.



[Ber. 30, pp. 549 and 559.]

Indenigo.

Theoretical considerations about the color of organic substances induced V. Kaufmann to prepare an analogue of indigo in which the imido groups have been replaced by carbonyl groups. He succeeded in preparing several more or less closely related compounds to one of which, the analogue sought, he assigned the formula

$$C_6H_4<^{CO}_{CO}>C : C<^{CO}_{CO}>C_6H_4.$$

This diphtalylethene is red and can be obtained in small quantities by the action of bromine or silver upon dibromdiketohydrindene, $C_6H_4<^{CO}_{CO}>CBr_2$ in benzene solution. [Ber. 30, p. 382.]

Origin of Pilocarpidine.*

Petit and Polonovski combat the theory of Hardy and Calmels that pilocarpidine is a decomposition product, but consider it to exist in the plant, since the absence of strong acids and alkalies, the action of boiling water alone cannot produce it in large quantities, seeing that it has but little action in pilocarpine, and even when heat is entirely avoided more or less pilocarpidine is always found. Again, operating under like conditions with different species of jaborandi, the yield of pilocarpidine is always found. Again, operating under like conditions with different species of jaborandi, the yield of pilocarpidine varies greatly, oscillating between 5 and 75 p. c. of the total alkaloids; and lastly it is usually found in greater proportion in the stems than in the leaves of the same plant.

[Journ. de Pharm. [6], v., p. 478.]

Butyric Fermentation.

Last year O. Emmerling (Ber. 29, p. 2726) reported that he did not succeed in successfully repeating the experiments of Fitz. After numerous attempts he at last obtained a variety of hay from which he obtained pure culture of the *bacillus butylicus* of Fitz, which he isolated by means of anaërobic methods. From 100 g. glycerin he obtained 6.3 g. pure normal butyric alcohol which was identified by means of its iodide. Mannitol yielded upon fermentation 10.5 g. butyl alcohol, whereas grape sugar yielded only ethyl alcohol. In all these instances considerable quantities of butyric acid resulted.

The same species was found in decaying wood. It is not identical with a closely related species of *Granulobacter saccharobutyricum* of which Beyerinck supplied pure cultures. With glycerin this yielded only ethyl alcohol, whereas with grape sugar it is stated to yield butyl alcohol. Neither of the two species break up cellulose, at least experiments gave negative results.

[Ber. 30, p. 451.]

Fermentation with Moulds.

It is known that moulds will produce alcoholic fermentation under abnormal conditions. This is especially true of certain species of mucor, which in the absence of oxygen produce yeast-like forms in saccharine liquids and convert the sugar into alcohol. Fitz and Bufeld, also A. Mayer have made interesting chemical and botanical experiments along this line and have determined how much alcohol the fungus can produce without detriment to itself.

Pasteur has shown that in the true alcoholic fermentation by yeast glycerin and succinic acid are also found and that the amount stands in direct relation to the amount of alcohol.

O. Emmerling has now ascertained that the moulds produce glycerin in addition to alcohol and succinic acid (Fitz). He experimented with *Mucor racemosus*. The ratio of alcohol to glycerin to succinic acid was 22:1.83:0.31. In other words the glycerin amounted to 8.3 p. c. and the succinic acid to 1.4 p. c. of the alcohol, which is about the same average proportion found for yeast fermentation. [Ber. 1897.]

Pilocarpidine in Pilocarpine Salts.*

Continuing their researches on the jaborandi alkaloids, Petit and Polonovski state that the greater part of the commercial salts of so-called "pilocarpine" are in reality salts of the two bases. This is notably the case with the nitrate, the nearly equal solubility of the two nitrates, allowing them to crystallize together. While the greater number of samples of commercial hydrochloride of pilocarpine contained relatively little pilocarpidine, nitrate was frequently met with containing 50 p. c. of the latter base. This impurity may be readily detected by the lowering both of the melting point and of the rotatory power of the solution. Thus, the pure nitrate melts at 177–178° C., while a mixture of impure salt containing 50 p. c. of pilocarpidine nitrate softens at 140°, and is completely decomposed at 150°. Not only does the optical behavior indicate the purity or otherwise of the salt, but the observed figure allows, through Landolt's formula, of an approximate determination of the amount of the two nitrates present.

[Journ. de Pharm. [6], v., p. 475.]

Pilocarpic and Pilocarpidic Acids.*

So far from these acids being hypothetical, Petit and Polonovski have succeeded in isolating both in the free state, and find that they are fairly stable, particularly in the presence of water. The bases pilocarpine and pilocarpidine are regarded as anhydrides, which, when treated with fixed alkali, undergo hydrolysis, and the sodium salt of the acid is formed. From this the barium salt was prepared, and this, when decomposed with an exact equivalent of sulphuric acid, liberates the organic acids on evaporation. These are obtained in the state of amorphous varnishes. The acids are very soluble in water, but insoluble in ether and chloroform; the optical rotation is markedly lower than that of the original alkaloid. On heating, partial dehydration takes place with partial re-generation of the alkaloids. On the addition of an acid, even dilute, the alkaloid is rapidly regenerated. In very dilute acid solutions the gradual dehydration of the acid may be observed by the progressively increasing optical activity of the solution, until ultimately it reaches the figure for the pure alkaloid.

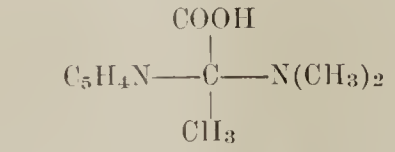
[Journ. de Pharm. [6], v., p. 481.]

Pilocarpine and Pilocarpidine.*

Petit and Polonovski are inclined to regard pilocarpine and pilocarpidine as isomers. The figures obtained by ultimate analysis are so close that the

* Through Pharm. Journ.

physical characters are by far the most important points of difference between the two alkaloids. If pilocarpine is regarded as the betaine of pyridine-trimethyl-ammonium-proprionic acid, it is difficult to account for the fact that pilocarpidine, which does not, according to the views held by others, possess the anhydric group, but is pyridine-dimethyl-ammonium-proprionic acid,



can yet furnish an acid by hydrolysis in a precisely similar manner to pilocarpine.

[Journ. de Pharm. [6], 5, 482.]

On the Alkaloids of the Lupines.

E. Schmidt and L. Sherman Davis have recently published a series of articles on the alkaloids contained in the seeds of various species of *Lupinus*. The object of the investigation was to throw light on conflicting statements of older literature, and to ascertain in how far the different species show a similarity or difference in chemical composition taking the alkaloids as a basis for comparison. The following species have thus far been examined *L. augustifolius* or blue lupine, *L. albus* or white lupine, *L. luteus* or yellow lupine, *L. niger* or black lupine, and *L. perennis* or the perennial lupine. The seeds of several species cultivated for ornamentation have also been found to contain alkaloids, but no further report than a mere statement is made thus far.

The alkaloids preexisting are

Dextrogyrate lupanine:	$C_{15}H_{24}N_2O$
Inactive lupanine:	$C_{30}H_{48}N_4O_2$
($+C_{15}H_{24}N_2O$ and $-$	$C_{15}H_{24}N_2O$)
Lupinine:	$C_{21}H_{40}N_2O_2$
Lupinidine:	$C_8H_{15}N$.

Of these the seeds of the blue lupine contain only o-lupanine; the seeds of the white lupine +lupanine and o-lupanine; those of the yellow and black lupine each lupinine and lupinidine; while the seeds of the perennial lupine contain +lupanine and an alkaloid not yet identified.

[Arch. f. Pharm. 235, p. 192—240.]

Corydaline.

Drs. J. J. Dobbie and F. Marsden, in a fifth communication on this compound, state that when it is heated on a water bath with very dilute nitric acid (about 1:20), a difficulty soluble nitrate, $C_{22}H_{29}HO_4$. HNO_3, is first formed. On further heating, the solution becomes dark red in color, and soon ceases to give any precipitate on testing with ammonia. If at this stage the solution be allowed to cool, groups of bright yellow prismatic crystals separate out on the sides of the vessel, consisting of the nitrate of a base—dehydrocorydaline—differing from corydaline by four atoms of hydrogen. The free base is very soluble in water and alcohol, and difficult to obtain in crystals. Solutions of dehydrocorydaline and its salts have an intense yellow color, and give a vivid green color with blue litmus. Reducing agents reconvert dehydrocorydaline into optically inactive corydaline. Further concentration of the acid solution until platinum chloride no longer gives a precipitate, causes yellow colored crystals of an acid melting at 218° to separate out on cooling. This is temporarily named corydic acid. It is readily soluble in hot water and in alcohol, but insoluble in ether. Its aqueous solution has an intense yellow color, and does not give precipitates with any of the metals in aqueous solution. The acid contains two methoxy-groups and is dibasic. Its formula is $C_{14}H_9N$. $(OCH_3)_2(COOH_2)$,$\frac{1}{2}H_2O$.

[Proc. Chem. Soc., 179, 101.]

A Delicate Test for Nitrites.

About a year ago, Dr. E. Riegler in Fresenius' Zeit. für anal. Chem. recommended crystallized naphthionic acid as a reagent for nitrous acid. Since then he has discovered that the delicacy of the reaction depends largely upon the purity of the reagent and as a result he recommends the following modifications of the test:

Instead of naphthionic acid he uses an intimate mixture of this substance with an equal quantity of pure β-naphthol, which mixture can be kept indefinitely and to which he assigns the name: Naphthol-reagent for Nitrites. To apply the test, a small quantity (0.02—0.03 g.) of the reagent is added to about 15 ccs. of the suspected solution contained in a test-tube, after which 2—3 drops of concentrated hydrochloric acid are added, and the mixture thoroughly shaken for a minute. If now a cc. of concentrated ammonia water is allowed to run down the sides of the inclined tube, in the presence of nitrites a red ring will appear at the line of contact. The reaction depends upon the formation of diazonaphthalinsulphonic acid, which combines with β-naphthol to form an intensely red azo-compound.

The reaction is extremely delicate, rose-colored solutions being formed in dilutions of 1 to 100 million. The test can be applied to saliva or urine as well as to water. Instead of using the powder, a solution can be also prepared by dissolving 1 g. naphthionic acid, 1 g. β-naphthol and 0.5 g. sodium hydroxide in 200 ccs. of water; of this solution, about 10 drops are required for a test. On account of the comparative instability of the solution, the author prefers the use of the reagent in powder form.

[Pharm. Centralh.; 1897, p. 191.]

Alcoholic Fermentation without Yeast.

The interesting and valuable investigations of H. Buchner (See p. 94) have not lead to a new theory, but must be regarded as strengthening by experiment a theory already well established theoretically. This is claimed by G. Wendt who quotes from an article Ueber den Chemismus im lebenden Protoplasma, published by him in Haeckel's Jenaische Zeitschr. f. Naturw. f. 1893:—"The only conclusion remaining is that the excretions of the organisms constitute the ferments which causes the chemical breaking down. But these ferments are differently constituted than the heretofore characterized enzymes. Like all other similar excretion products, they themselves are capable of double decomposition. In the breaking down of the fermentable material they themselves break up."

[Pharm. Ztg. 42, p. 389.]

Testing of Quinine.

A further contribution to the controversy regarding Kubli's method for testing quinine is furnished by A. Weller. (See also p. 119.) The tenor of the article is on the whole strictly objective and deserving of the attention of quinologists and analysts. It cannot well be abstracted. [Pharm. Ztg. 42, p. 344.]

New Gold Salts of Solanaceous Alkaloids.*

H. A. D. Jouett of the Wellcome Research Laboratory, as reported at a recent meeting of the Chemical Society, has isolated and analyzed double salts of atropine and hyoscyamine hydrobromide respectively with gold chloride and finds them to possess the general formula $BH\overset{+}{B}r.AuCl_3$. The two salts differ merely, it appears, in shade of color. Although inorganic mixed double halides were pointed out to exist, attention was called to the supposed fact that this is the first instance of an organic mixed double halide.

[Chemist & Druggist 50, p. 914.]

The Distribution of Alkaloids.†

Apocynaceæ.

Alstonine (Chlorogenine), $C_{21}H_{20}N_2O_4$ (?), Alstonia constricta Rut.

Alstonidine, —, Alstonia constricta Rut.

Porphyrine, $C_{21}H_{25}N_3O_2$ (?), Alstonia constricta Rut.

Ditamine, $C_{16}H_{19}NO_2$, Alstonia scholaris R. Br. or Echites scholaris L.

Echitamine (Ditaïne), $C_{22}H_{28}N_2O_4$, Alstonia scholaris R. Br. or Echites scholaris L.

Echitenine, $C_{20}H_{27}NO_4$ (?), Alstonia scholaris R. Br. or Echites scholaris L.

Aspidospermine, $C_{22}H_{30}N_2O_2$, Aspidosperma Quebracho and other species of Aspidosperma.

Aspidospermatine } Aspidosamine }, $C_{22}H_{28}N_2O_2$, Aspidosperma Quebracho and other species of Aspidosperma.

Hypoquebrachine, $C_{21}H_{26}N_2O_2$, Aspidosperma Quebracho and other species of Aspidosperma.

Quebrachine, $C_{21}H_{26}N_2O_3$, Aspidosperma Quebracho and other species of Aspidosperma.

Quebrachamine, —, Aspidosperma Quebracho and other species of Aspidosperma.

Oleandrine, —, Nerum Oleander.

Pseudocurarine, —, " "

Paytine, $C_{21}H_{24}N_2O$, Payta bark (Aspidosperma species).

Paytamine, $C_{21}H_{24}N_2O$, " " " "

Geissospermine, $C_{19}H_{24}N_2O_2+H_2O$, Geissosperma Vellosii.

Pereirine, $C_{19}H_{24}N_2O$ (?), " "

Vellosine, $C_{23}H_{28}N_2O_4$, " "

Conessine (Wrightine), $C_{12}H_{20}N$, Wrightia antidysenterica R. Br. (Cortex conessi).

Johimbine, $C_{28}H_{32}N_2O_4$ or $C_{21}H_{28}N_2O_3+\frac{1}{2}HO_2$, Tabernaemontana species.

Johimbenine, —, Tabernaemontana species.

Araliaceæ.

Hederine, —, Hedera Helix.

Aristolochiaceæ.

Aristolochine (?), —, Aristolochia reticulata Nutt. and A. argentina.

Aristolochine, $C_{32}H_{22}N_2O_{13}$ (?), Aristolochia clematis, rotunda and longa.

Unknown alkaloid, —, Bragantia Wallichii.

Asclepiadaceæ.

Marsdenine, —, Cynanchum erectum.

Berberidaceæ.

Berberine, $C_{20}H_{17}NO_4$, Berberis vulg. & aquif.

Berbamine, $C_{18}H_{19}NO_3$, " " "

Oxyacanthine, $C_{19}H_{21}NO_3$, " " "

Nandinine, $C_{19}H_{19}NO_4$, Nandina domestica.

Borraginaceæ.

Cynoglossine (= Heliotropine?), —, Cynoglossum officinale & Heliotropium europæum.

Buttneriaceæ see *Sterculiaceæ*.

Buxaceæ see *Euphorbiaceæ*.

Cactaceæ.

Anhalonine, $C_{12}H_{15}NO_3$, Anhalonium Lewinii (Mescal Buttons.

Anhalonidine, $C_{12}H_{15}NO_3$, Anhalonium Lewinii (Mescal Buttons).

Mezcaline, $C_{11}H_{17}NO_3$, Anhalonium Lewinii (Mescal Buttons).

Sophophorine, $C_{13}H_{17}NO_3$, Anhalonium Lewinii (Mescal Buttons.)

Anhaline, $C_{10}H_{17}NO$, Anhalonium fissuratum.

Pellotine, $C_{13}H_{19}NO_3$, " Williamsi.

Caesalpiniaceæ see *Leguminosæ*.

Camelliaceæ see *Ternstroemiaceæ*.

Cannabineæ see *Urticaceæ*.

Caprifoliaceæ.

Coniine, —, Sambucus nigra.

Caryophyllaceæ: Sileneæ.

Agrostemmine, —, Agrostemma Githago.

Celastraceæ.

Celastrine, —, Celastrus edulis.

Chenopodiaceæ.

Trimethylamine, $(CH_3)_3N$, Chenopodium vulgaria.

Chenopodine, $C_6H_{13}NO_4$, " album.

Betaïne, $C_5H_{11}NO_2$, " "

Compositæ.

Anthemine, —, Artemisia arvensis.

Chrysanthemine, $C_{14}H_{38}N_2O_3$, Chrysanthemum cinerariæfolium.

Parthenine, —, Parthenium Hysterophorus L.

Eupatorine, —, Eupatorium cannabinum.

Baccharine, —, Baccharis cordifolia D. C.

Hyoscyamine, $C_{17}H_{23}NO_3$, Lactuca sativa and L. virosa.

Cirsiine, —, Cirsium arvense.

Pellitorine, —, Anacyclus Pyrethrum.

Senecionine, $C_{18}H_{25}NO_6$, Senecio vulgaris.

Senecine, —, " "

Cruciferæ.

Sinapine, $C_{16}H_{23}NO_3$, Sinapis alba.

Cucurbitaceae.

Trianospermine, —, Trianosperma ficifolia.

Trianospermitine, —, " "

Ericaceae.

Andrometoxine, —, Andromeda japonica etc., Cassandra, Azalea, Rhododendron, Kalmia, Pieris.

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* It may be true, as far as the writer is aware without looking up the literature on the subject, that this is the first instance of a mixed double halide with a natural alkaloid as the base. However, five years or more ago the writer had mixed double halides prepared in the pharmaceutical laboratory of the University of Wisconsin with benzylamine and aniline as bases. A partial report appeared in the Proc. Wisc. Pharm. Assn. of the same year. Ed.

† Continued from p. 119.

Erythroxylaceae.

Cocaïne, $C_{17}H_{21}NO_4$, Erythroxylon Coca.
Benzoylecgonine, $C_{16}H_{19}NO_4+4H_2O$, " "
α-Hygrine, $C_8H_{15}NO$, " "
β-Hygrine, $C_{14}H_{24}N_2O$, " "
Isatropylcocaïne, $C_{19}H_{23}NO_4$, " "
Benzoyl-pseudotropeïne, $C_{15}H_{19}NO_2$, " "
(from Java).

Euphorbiaceae incl. *Buxaceae.*

Ricinine, $C_{17}H_{18}N_4O_4$, Ricinus communis.
Mercurialine (methylamine), CH_3NH_2, Mercurialis annua.
Minaline (v. Parodi), —, Croton minal Parodi.
Buxine, $C_{16}H_{21}NO_3$, Buxus sempervirens.
Parabuxine, $C_{26}H_{48}N_2O$ (?), " "

Fumariaceae.

Corydaline, $C_{22}H_{27}NO_4$, Corydalis tuber, cava etc.
Bulbocapnine, $C_{19}H_{19}NO_4$, Corydalis cava.
Corytuberine, $C_{19}H_{25}NO_4$, " "
Corybulbine, $C_{21}H_{25}NO_4$, " "
Corycavine, $C_{23}H_{23}NO_6$, —
Fumarine, $C_{21}H_{19}NO_4$, Fumaria officinalis.

Labiatae.

Stachydrine, $C_7H_{13}NO_2$, Stachys tuberifera.

Lauraceae.

Nectandrine, $C_{20}H_{23}NO_4$ (?), Nectandra Rodiæi Schomb.
Bibirine or Bebeerine, $C_{19}H_{21}NO_3$ (?), Nectandra Rodiæi.
Sipirine (?), —, " "
Laurotetanine, —, Litsæa chrysocoma.

Leguminosae. a) *Papilionaceae.*

Trigonelline, $C_7H_7NO_2$, Trigonella fœnum græcum.
Sparteïne, $C_{15}H_{26}N_2$, Spartium scoparium.
Lupinine, $C_{21}H_{40}N_2O_2$, Lupinus luteus etc.
Lupinidine, $C_8H_{15}N$, " " and albus.
Lupanine[1], $C_{15}H_{24}N_2O$, " augustifolius and albus.
Lupanine[2], " " albus.
Eserine (Physostigmine), $C_{15}H_{23}N_3O_2$ (?), Physostigma venenosum.
Eseridine, $C_{15}H_{23}N_3O_2$, (?), Physostigma venenosum.
Eseramine, —, " "
Calabarine, —, " "
Cytisine, $C_{11}H_{14}N_2O$, Cytisus laburnum.
Anagyrine, $C_{14}H_{18}N_2O_2$, Anagyris fœtida.
Arginine, $C_6H_{14}N_4O_2$, In seedlings from vetch.
Vernine, $C_{16}H_{20}N_8O_8+3H_2O$, Vicia, sativa.
Vicine, $C_{28}H_{51}N_{11}O_{21}$ (?), Vicia Faba & V. Fab. minor.
Convicine, $C_{10}H_{14}N_3O_7+H_2O$ (?), " " " "
Choline, $C_5H_{15}NO_2$, Vicia sativa, Pisum sativum.
Betaïne, $C_5H_{11}NO_2$, " " " "
Angeline, $C_{10}H_{13}NO_3$, Ferreira spectabilis.
Coralloidine or
Erythroidine, —, Erythrinum coralloides.
Baptitoxine (?), $C_{11}H_{14}N_2O$, Baptisia tinctoria R. Br. and Baptisia australis.
Vinaline v. Parodi, —, Vinal (Prosopis ruscifolia Gries).
Hypaphorine, —, Hypaphorus subumbrans.

b) *Caesalpiniaceae.*

Erythrophleïne, $C_{20}H_{27}N_3O_2$, Erythrophleum guineense.
Surinamine, $C_{10}H_{13}NO_3$, Geoffroya surinamensis.
Andirine, $C_{10}H_{13}NO_3$, Andira inermis.

[1] Siebert.
[2] Soldaini.

c) *Mimoseae.*

Paucine, $C_{27}H_{39}N_5O_5$ (?), Pentaclethra macrophylla Graine d'Owala).
Sophorine, $C_{11}H_{14}N_2O$, Sophora tomentosa & S. speciosa.
Matrine, $C_{15}H_{24}N_2O$, " angustifolia.
Erythrine, —, Erythrina (s. Stenotropis) Broteroï Hassk.
—, —, Crotolaria retusa L.
—, —, Acacia tenerrima Jungh.
—, —, Pithecolobium Endl.

Botany and Pharmacognosy.

Basilicum Oil.

On p. 94 of this journal an abstract of the work of Bertram and Walbaum will be found. It might be added that the pinene identified was found to be dextrogyrate and that a detailed report is to be found in the journal accredited below.

[Arch. f. Pharm. 235, p. 176.]

Guaiac Resin.

Herzig and Schiff compare the results obtained by Doebner and Lnecker (Arch. f. Pharm. 234, p. 593) with those obtained by one of them about two years ago (Ber. 28, p. 866). They point out that the apparent differences brought out in the two reports are not actual. An abstract of this comment without the results of the earlier reports would be of little value and those especially interested will have to consult the originals. [Ber. 30, p. 378.]

Castor Oil.

Hans Meyer supplements the results which he published about the chemistry of castor oil in 1890 (Arch. f. experim. Pathol. u. Pharmacol. 28, p. 145). The present paper is principally a reply to Juillard, (Bull. de la soc. chim. de Paris [3] 13, p. 283). Those who are interested in the controversy will have to consult the originals, since an abstract will not do justice to either party.

[Arch. f. Pharm. 235, p. 184.]

The Root of Phytolacca Decandra.

George B. Frankforter and Francis Ramaley report the results of a second chemical investigation of poke root. The results of two proximate analyses are given. Besides potassium nitrate and calcium oxalate, cane sugar was obtained in a crystalline form. These, however, were not pure, containing only 87.6 p. c. of sucrose. Sugars reducing Fehling's solution to the extent of 4.4 p. c. and calculated as dextrine but not identified, as such were found to be present. The other impurities were not determined. Reactions for an alkaloid or alkaloids were obtained, but no substance of an alkaloidal nature was isolated. The investigation evidently is to be continued.

[Am. Journ. Pharm. 69, p. 281.]

Celery Oil.

Ciamician and Silber have examined the high-boiling fractions of celery oil and have isolated the following substances:

A terpene-like substance, probably of the formula $C_{15}H_{24}$;

Palmitic acid and phenol like substances;

A lactone-like substance of the formula $C_{12}H_{18}O_2$; and

An acid of the formula $C_{12}H_{18}O_3$.

It still remains to be determined whether all of these substances preexist in the fruit or whether in part they are formed during the process of distillation. The authors are of the opinion, however, that the lactone preexists in the fruit since to it the odor of the fruit is largely due. The acid $C_{12}H_{18}O_3$, on the other hand, does not preexist since it cannot be extracted with carbonated alkalies. Of palmitic acid and phenols but small quantities were obtained. The acid $C_{12}H_{18}O_3$ is termed sedanonic acid, a keto (-one) acid; the lactone, $C_{12}H_{18}O_2$, sedanolid, is the inner anhydride of sedanolic acid, $C_{12}H_{20}O_3$, an alcohol (-ol) acid.

The keto acid receives special attention in a second contribution. The oxime, when treated according to Beckmann's method (Umlagerung und Aufspaltung der Ketoxime) yielded normal butylamine and a dibasic acid, $C_8H_{10}O_4$, a tetrahydrophthalic acid.

[Ber. 30, pp. 492 and 501.)

Periploca graeca.

This member of the natural order *Asclepiadaceæ* is found by Prof. Eduard Lehmann to contain an organic principle, a bitter glucoside called by him *periplocin*, which acts on the heart and blood pressure equally with *Strophanthus* and *Apocynum cannabinum*. This plant has a weak woody development and climbs on tree trunks by twining. The long, cylindrical rhizome, little different from the aërial stem, either creeps on the earth or slightly below its surface and sends out both aërial and short, little branching, subterranean roots. In old specimens, the stem reaches a length of over 8 meters and a diameter at the surface of the soil of 2½ cm. The smooth, opposite, entire leaves are oblong, oval, cordate at the base, acuminate at the apex. The axillary, corymbose inflorescence is made up of relatively small, inconspicuous flowers. The fruit consists of two cylindrical capsules united at both base and apex and reaches a length of 10 cm. The seeds are numerous, with long, hairy, pencil-shaped coma.

All green parts of the plant, especially the juicy bark, the leaves and unripe fruit contain an exceedingly bitter, white milk juice, found in much branching latex vessels. When these parts are bruised, a weak but distinct odor resembling the volatile oil of bitter almonds is detected.

[Arch. d. Pharm. 235, p. 157.]

The Tonka Bean.

Director J. H. Hart of the Royal Botanical Gardens, Trinidad, reports the following about the tonka bean:

The tonga, tonquin or tonka bean is the product of a tree known to botanists as *Dipterix odorata* Willd., and less frequently as the *Coumarouna odora* Aublet. The latter name according to the Index Kewensis is the *nomen primus*.

The tree thrives well in Trinidad when planted in shady, damp situations, and is very abundant in the forest of the neighboring mainland of Venezuela. The fruit or seed ripens in June and July, and in these months large shipments are received in Trinidad from South American ports.

The beans are sent to Trinidad for preparation for European and American markets. For this purpose they are conveyed to warehouses, where, under customs regulation, they are steeped in rum for a certain time, and are then spread on the floors in layers nine to twelve inches in thickness, to undergo a kind of fermentation and decay, during which process white crystals are developed on the outside of the bean. As much as £30,000 worth have been imported and re-shipped during a single year. The tree grows some sixty or more feet high. The solitary seed is borne in a drupe-like pod, which does not open at maturity. The seed, when ripe, so soon loses its vitality that it is at times difficult to procure supplies for raising plants.

[Bull. of Pharm. 11, 269; from Bulletin of Miscell. Information.]

Japanese Uses of Burdock.

The burdock (*Arctium Lappa*, *A. tomentosa* and *A. minor*), aside from its character as a pest, is best known to Americans as a medical plant. In Japan, however, according to Inazo Nitobe, it is largely cultivated as a vegetable. It is commonly known as *Gobo*, *Kitakisu* and *Uma-fuki* (horse Nardosmia). The Ainu know it as *Setakorokoni* (dog Nardosmia). The Ainu and Japanese prefixes, *seta* and *uma*, are applied to plants with the same meaning as "dog" and "horse" as in dogwood and horsemint in the English. The Ainu boil the tender shoots with beans, and the roots are put into soup. In 1888, seventy-two million pounds of burdock-root, valued at 422,134 yen (a yen equals one dollar), were raised in Japan. This is not much to be wondered at when it is remembered that burdock ranks high in the scale of nutritive plants, containing more nitrogen (5.6 percent) than potatoes, carrots, beets and turnips, in fact, very few roots or tubers approaching it.

There are many varieties, but the best known are few and are usually named after the place near which they were developed. The Owura variety attains a size of one and a half feet in circumference and two and a half feet in length, this variety, in form like the beet, selling at about twenty sen (a sen equals one cent) apiece.

A sandy soil is commonly thought to be the best for cultivating the root, but it is apt to make the burdock-root hollow in the center and tough at the rind. A clayey loam imparts firmness to the root and a better flavor. The soil should be plowed deeply and should be finely pulverized. The plant thrives better if planted continuously in the same soil, and is grateful for good manures. The seeds are planted in April or May (or August if for spring use) in rows three feet apart, and five or six together every six or eight inches in a row. In the early part of June the young plants are thinned out to one plant in a hill. Liquid manure is often applied two or three times between the thinning and harvesting, which occurs late in December.

The roots are peeled and sliced thin, boiled with soy (soja bean), salt or Spanish pepper for flavoring. If boiled alone, they may afterward be browned with sesame oil. They may also be peeled or scraped, sliced into thin pieces, boiled until soft, mashed and made

into small cakes and treated in the same manner as oyster plant. A sort of salad is also prepared from them, though not uncooked. A more elegant way of preparing them is to stuff the roots with sea-eel, dipping them into a preparation of soy and pepper and then boiling them. The root is oftenest sliced, fried, and eaten with condiments.

[Bull. of Pharm. 11, 268; from Garden and Forest.]

India Rubber, Sources and Cultivation.

In view of the constantly increasing use of India rubber during recent years in electrical technique and for tires of bicycles and other vehicles, the rapid depletion of the South American forests furnishing Para rubber, has caused not a little disquietude in the minds of those most directly interested.

Mr. John R. Jackson of the Royal Kew Gardens, England, reviews the present resources of the world in regard to India rubber and concludes that at present it is necessary to prevent as far as possible all waste both of the product itself and of the plants yielding it. He regards the prospect for the future, however, as hopeful, since the resources of tropical Africa of late have increased rapidly enough to offset the loss from American sources. While the Para rubber from *Hevea braziliensis* is of a quality superior to that from other sources, we are in little danger of an absolute failure of the general rubber supply.

The Para rubber was that first discovered, appearing in London in 1770 as a new means for rubbing out pencil marks on paper and commanding a price of about seventy-five cents per cubic inch. At the beginning of the present century, it began to find use in the treatment of woven fabrics for air tight and water proof articles. Importation into England increased rapidly, as is shown by the following statistics:

Year.	Amount.
1837.....	141,735 pounds.
1857.....	3,477,445 "
1896.....	48,290,368 "

The importation of 1896 was valued at £4,993,166.

As far back as 1873, the necessity of providing for a supply in the future occupied the attention of the Kew authorities, and living plants of *Hevea braziliensis* were sent to India in the hope of establishing the plant there. Smaller consignments were made to the West Coast of Africa, Jamaica, Dominica, Trinidad, Singapore, Queensland and Java.

In addition to this plant, *Manihot Glaziovii*, a native of Central America and likewise a member of the order *Euphorbiaceæ*, furnishes a kind of rubber known as "Ceara Scrap" from the fact that this sort always appears in commerce in masses composed of agglomerated scraps. In 1876, a large quantity of seeds and plants of this species was collected in Central America and brought to Kew. They were rapidly propagated and plants were sent to Ceylon, Singapore, Calcutta and other places, in most of which the plant grew rapidly and yielded rubber, demonstrating their capability of establishing themselves in their new homes.

The Nettle family, *Urticaceæ*, contains a number of rubber-producing plants. Important among these is *Castilloa elastica* and allied species, which furnish the Guatemala, Mexico and West India rubbber. *C. elastica* received much attention at Kew and in 1876 was widely distributed.

The source of Assam rubber, which is shipped from Calcutta, is the plant well known with us as a house plant bearing fine, glossy leaves, *Ficus elastica*. A related species, *F. Vogelii*, from West Africa furnishes a kind of Lagos rubber, in quality rather inferior, because of its resinous character.

The *Apocynaceæ*, the Dogbane family, contains a number of rubber-producing plants. Several species of the genus *Landolphia*, climbing, shrubby plants with stems four to six inches in diameter, furnish the rubber commercially known as African rubber.

Landolphia owariensis, *L. florida* and *L. Kirkii* are especially valuable species.

Lately the discovery of a new source for Lagos rubber of a most excellent quality has given a great impetus to the trade of the West Coast of Africa. The plant concerned is *Kicksia Africana*, a tree fifty to sixty feet high, having a stem twelve to fourteen inches in diameter. January 1895 practically marks the beginning of this industry: The exports at this time were 21,131 pounds, valued at £1,214, and at the end of December of the same year the total export for the year was 5,069,506 pounds, valued at £269,892.

Among plants of minor importance as rubber producers are *Willughbeia* and *Leuconitis* of the far East. *Alstonia flexuosa* of the Fiji Islands and *Forsteronia floribunda* and *F. gracilis* in Jamaica and Demerara yield rubber in small quantities.

[Bull. of Pharm. 11, 254; from Nature.]

Culilaban Oil.

The distillation of culilaban bark from *Cinnamomum culilavan* Nees yielded 4 per cent of oil, having a sp. gr. of 1.051, a strong odor of engenol; on account of its dark color the determination of its rotatory power could not be made. Inasmuch as the composition of this oil was not sufficiently known, it was submitted to an examination.

The phenol contained therein was isolated by agitating the oil with dilute solution of sodium hydrate and by subsequent separation by means of dilute sulfuric acid. The phenol obtained had a boiling point of 251° to 253° and a sp. gr. of 1.071 at 15°, corresponding to those of eugenol. The benzoyl compound obtained therefrom has the same melting point as benzoyl-eugenol, 70° to 71°. The phenol of culilaban oil, therefore, is identical mith eugenol.

The remainder of the oil, derived of the phenol, boiled at 100° to 130° under a pressure of 10 mm.; the main fraction, boiling at 125° to 130°, was heavier (sp. gr. 1.034), the fractions with a lower boiling point were lighter than water. The main fraction distilling at 249° to 252° under common atmospheric pressure yielded upon oxidation by means of potassium permanganate veratric acid with a melting point between 179° and 180°.

The silver salt crystallizing in needles from an aqueous solution was used for analysis; 0.2508 Gm. of silver salt yielded 0.0938 Gm. Ag:

calculated for $C_9H_9O_4Ag$	found
37.37 per cent Ag.	37.40 Ag.

This result, as well as the boiling point of the fraction indicate, methyleugenol. By bromation of a

part of the fraction, tribrommethyleugenol melting at 77° was obtained.

According to the result of this examination, culilaban oil consists mainly of eugenol, and contains besides some methyleugenol and a small amount of constituents of a lower specific gravity than water.

[Rep. Schimmel & Co., April '97, p. 14.]

Lemon Oil.

Of considerable importance, particularly in legal controversies, is the question whether normal lemon oil contains or does not contain pinene. In order to get at the truth, we distilled 50 kilos of lemon oil employing a vacuum cooler. The first distillates—about 1 kilo—were subjected to repeated fractional distillations, aiming at the fraction passing over at the lowest temperature; this boiled at the temperature of 172°. Below this temperature, 8 cc., equal to 0.016 per cent passed over, and this was wanting in all of the properties of pinene. Pure lemon oil therefore, does not contain pinene; if so, it is adulterated with turpentine oil.

In former investigations, at the time when a discrimination between pure and sophisticated oil could not be ascertained, pinene had been found in lemon oil and was considered a constituent of the same. In conformity with the present state of knowledge, there can be no doubt that the oils then examined contained turpentine oil.

From recent investigations we obtained the evidence that the sophistication with turpentine oil is again much in vogue; we have met with commercial oils containing as much as 60 per cent of turpentine oil.

[Rep. Schimmel & Co., April '97, p. 20.]

New Remedies.

Cordol.

Under this name Gehe & Co. have placed upon the market tribromsalol, recommended as a sedative, antirheumatic, and antineuralgic. It is a crystalline powder of melting point 195°, insoluble in water and but difficultly soluble in alcohol and ether. Dose per day 2.0 to 6.0 g.; single dose 0.5—2.0 g. The acetyl and methyl compounds of cordol have also been prepared and will be subjected to clinical examinations.

[Pharm. Zeit., 1897, p. 325.]

Vanillin-p-phenetidine.

This new antineuralgic was first prepared by Dr. Carl Goldschmidt, in Frankfurt a. M., by heating vanillin with p-phenetidine to 140°. The condensation product

$$C_6H_3(OH)(OCH_3)(CH{:}NC_6H_4OC_2H_5)$$

crystallized from hot water, melts at 97°. It has only a slight toxicity, and differs from other known p-phenetidine compounds with aldehyde, not only in being water-soluble, but also in combining hypnotic with antineuralgic properties.

[Pharm. Centralh., 1897, p. 353.]

Naphthionic Acid.

This substance, on account of its property of forming diazonaphthylaminsulphonic acid in contact with nitrous acid, has been proposed by Dr. Riegler as a remedy in acute iodism. The administration of six 0.5 g. doses were productive of good results. Similarly favorable were the results in case of disease of the bladder due to alkalinity of the urine. Riegler recommends for this purpose 3—4 g. of the acid daily, in doses of 0.5 g., preferably accompanied by washing of the bladder with a 0.1 p. c. solution of the same substance. The same author also recommends the use of naphthionic acid in cases of poisoning by nitrites.

[Pharm. Zeit., 1897, p. 284.]

Kryofine.

This new antipyretic, like phenacetine a p-phenetidine derivative, is a condensation product of p-phenetidine and methyl glyconic acid. It is obtained by heating these two substances to 120—130°, and can be crystallized from water in needles of melting point 98 to 99°. The formation of the phenetidine methyl glycolate can be expressed by the following equation:

$$CH_3OCH_2COOH + NH_2C_6H_4OC_2H_5 = CH_3OCH_2CONHC_6H_4OC_2H_5 + H_2O.$$

Kyrofine forms white odorless crystals, almost tasteless, and therefore can be administered in powders. It is soluble in 52 parts of boiling or 600 parts of cold water, the concentrated solutions having a sharp, bitter taste. The dose as an antipyretic is 0.5 g., being therefore only half that of an equally effective quantity of phenacetine. Later researches seem to have also proved the efficiency of kryofine as an antineuralgic. This new remedy was first manufactured by Dr. Bischler and introduced into the market by the Chemische Fabrik Bindschedler in Basel, Switzerland.

[Pharm. Zeit., 1897, p. 283.]

Benzylmorphine.

The method of preparing this morphine derivative, as patented by E. Merck, consists in allowing benzylhalogen to react with morphine, preferably in the presence of alkali and some diluent (alcohol). The benzylmorphine formed is changed to the difficultly soluble hydrochlorate by the addition of hydrochloric acid, and isolated as such. Benzylmorphine is readily soluble in alcohol, ether, and benzol, crystallizing from these solvents in large shining prisms or plates; its constitution is $C_{17}H_{18}NO_2.O.CH_2C_6H_5$. In neutral solutions it does not give the blue coloration with ferric chloride that is characteristic of morphine. Benzylmorphine is said to have many advantages over the other known alkylesters of morphine, especially over methylmorphine (codeïne). Its narcotic action is much stronger than that of the latter, while the unpleasant secondary effects of morphine are entirely absent.

[Pharm. Zeit., 1897, p. 327.]

Monochlor-metacresol.

Upon chlorinating metacresol, the dichlor-compound is readily formed. A pure monochlor substitution product can however be produced if the reaction is conducted at sufficiently low temperatures, and the cresol is quite dilute, glacial acetic acid, benzol, and water being the best diluents for this purpose. The chlorine can either be introduced directly into the solution, or indirect chlorination methods (by means of sodium hypochlorite, e. g.) may be employed.

Monochlor-metacresol boils at 235° without decomposition. From ligroin it can be obtained in large crystals, melting at 66°. It dissolves readily in ether, alcohol, benzol, and glacial acetic acid, and is also soluble to a large extent in warm glycerin or in dilute alkaline solutions. In contrast to parachlorphenol it is absolutely odorless, on which account it has been proposed as a substitute for this disinfectant.

[Pharm. Zeit., 1897, p. 211.]

Physiology and Therapy.

Opotherapeutic Preparations and Animal Extracts.

Thanks to a great number of encouraging clinical experiments enormous progress has been made in the development of organo-therapeutic research. The secretions and excretions of the glands of the animal organs have ceased to be merely theoretically and physiologically interesting since it had been satisfactorily demonstrated that, by the incorporation of secretions of healthy animal glands, it is possible to remove anomalies existing in the human system and thus to neutralize irregularities in the metabolic process. The results of chemical and biological research have been utilized in practical medicine with dexterity and success, and the old, almost forgotten principles of healing human diseases with the aid of products extracted from animal organs have been revived and placed upon a scientific basis, which had previously been wanting. On the other hand, the organo-therapeutic treatment requires chemists to produce animal materia medica which are therapeutically effective and which satisfy all the requirements of modern research (vide Poehl, Wratsch 1892.

The organo-therapeutic principle was until recently carried out by employing fresh organs as such or the dried pulverized substance of these organs. Although the results were in many cases very satisfactory, yet it is not rational to use these preparations. Their employment is, in fact, suggestive of an attempt to push the axiom of Hahnemann, "*Similia similibus*", so far as to administer liver for liver complaints, calf's brain for diseases of the brain, etc. There is no intention to use the organs as such, these are merely vehicles of their useful secretions, much in the same way as in nature metabolism is influenced not by the tissues, but by their diffusable products. Modern investigations, in particular the observations of A. Gautier and Landi (Comptes rend., Acad. scienc. tome CXIV, pp. 374, 1048, 1154, 1312 and 1419) have shown that the animal tissues, like many micro-organisms, may optionally exist under aërobic and anaërobic conditions and that the anaërobic existence of the tissues has, after the death of the animal, considerable influence upon the chemical nature of the tissue fluid. Poehl (Russ. Journ. für med. Chem. and Pharm. 1893, pp. 157 and 283) has directly proved that during the preparation, by drying in vacuo, of the glandular extracts, a series of therapeutically important substances vanish, which he ascribes to the anaërobic activity of the glands, since during slow drying processes he has found it impossible to avoid this post-mortem function of the glandular tissue cells (anaërobic life). In conformity with modern requirements, only the isolated active components of the organs should be applied in medicine.* Unfortunately, our knowledge in this department is as yet very deficient. By the investigations of Poehl (vide E. Merck's Ann. Rep. 1893, p. 80; Deutsch. med. Wochenschr. 1892, No. 21, and elsewhere) it has been shown that all the organs which are employed for therapeutic purposes contain an element common to all, viz. spermine, to which probably is due, to a great extent, the general tonic effect of these substances. The organs contain, however, besides, other substances possessing specific therapeutic properties. For this reason Poehl (Deutsch. med. Wochenschr. 1895, Nos. 30 and 31; Russ. Journ. für med. Chem. and Pharm. 1895, p. 314, and elsewhere) has made an attempt to substitute for the organs or their tissue substance the leucomaines contained in the fluid of the organs, i. e. the basic bodies regularly and continuously formed by the physiological processes going on during the decomposition of the proteïn substances. Since the tissue-forming substance and the so-called precipitable albuminoids do not participate in the healing processes, their diminution is *a priori* desirable from a practical point of view. But if, in addition, it be borne in mind that their elimination implies also that of a whole series of other bodies belonging to the group of toxic proteïdes, this course should be regarded as an absolute necessity. The risk of meeting with toxic proteïdes does not exist in all glands alike, yet it is certain that it is present in some of the glands. Great importance attaches therefore to the elimination of the precipitable albuminous bodies, especially as the physiological action of the leucomaines is not thereby affected. As it happens, many of the leucomaines form with chloride of sodium double salts, which are freely soluble in water and highly diffusive. I intend therefore to transform the leucomaines contained in the organs into double salts of this kind.

In order to obtain pharmaco-dynamically uniform preparations, the admixture of chloride of sodium is such that 1 part of the preparation corresponds to 10 parts of the fresh tissue matter of the particular organ. These preparations are distinguished from those obtained by the ordinary process of drying or other methods by the prefix "Opo" (derived from ὀπός = juice, sap). This same prefix has been employed by Landouzy (Rép. de Pharm. 1896, p. 163) in the formation of the term "opotherapeutics", which this writer has suggested in place of the word "organo-therapeutics". It is intended to open the series of the "opo-preparations" with the following substances, some of which are already in process of manufacture:

Opothymiinum, from the thymus of the calf.
Opothyroidinum, from the thyroid gland.
Opohypophysinum, from the pitnitary gland.
Opomedullinum, from the red bone marrow.
Oporeniinum, from renal tissue.
Opolieninum, from splenic pulp.
Opoorchidinum, from the testicles.
Opoosiinum, from bone marrow.
Opoprostatinum, from the prostate.
Oposuprarenalinum, from the supra-renal capsule.

[Merck's Report for the year 1896, p. 106.]

* Vide also A. Gautier, Les toxines microbiennes et animales. Paris, 1896, pp. 282, 358 and 464.

Literary.

Books and Pamphlets Received.

R. Gaertner's Verlagsbuchhandlung—Berlin. Anleitung zu analytisch-chemischen Uebungsarbeiten auf pharmaceutischem und toxikologischem Gebiete. Zugleich als II. Auflage von Prof. Dr. Arthur Meyers Handbuch der qualitativen chemischen Analyse. Bearbeitet zum Gebrauche in pharmaceutisch-chemischen Laboratorien von Dr. Eduard Schaer und Dr. Paul Zenetti. Ein Bd., pp. v, 178. 1897.

—— Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neusten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Litteratur. Herausgegeben von Dr. Emil Jacobsen. 35. Jahrgang, 1896. Zweites Halbjahr, zweite Hälfte.

Verlag von Julius Springer—Berlin. Erstes Dezennium der Helfenberger Annalen 1886|1895. Eine Zusammenstellung der Werte, Methoden und Studien. Herausgegeben von Eugen Dieterich, Königl. Sächs. Hofrat. Ein Bd., pp. XVI, 462. 1897.

Verlag von Fr. Eugen Koehler—Gera-Untermhaus. Koehler's Neuste und wichtigste Medicinal-Pflanzen in naturgetreuen Abbildungen mit kurz erklärendem Texte. Ergänzungsband zu dem in den Jahren 1883 bis 1890 erschienenen Hauptwerke in zwei Bänden. Lieferungen VIII, IX, X und XI. 1897. M. 1.00 für je zwei Lieferungen.

Deutsche Verlags-Anstalt—Stuttgart. Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen.
Lieferung XXI: Grundwasser—Herzstück, pp. 1—160.
Lieferung XXII: Hessische Kurve—Isolator, pp. 161—320.
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1897. M. 5.00 pro Lieferung. Preis des ganzen Werkes M. 175.00.

Verlag von Gebrüder Borntraeger—Berlin. Grundprobleme der Naturwissenschaft. Briefe eines unmodernen Naturforschers von Dr. Adolf Wagner. Ein Bd., pp. VII, 255. 1897. M. 5.00.

École Supérieure de Pharmacie de Paris. Sur le dosage de la caféine. Thèse pour l'obtention du diplôme de pharmacien de 1re classe, présentée par Eugène Tassilly. Pamphlet, pp. 56. 1897.

—— Sur quelques oxydes doubles cristallisés obtenus a haute température. Thèse pour l'obtention du diplôme Pharmacien de 1re classe, présentée par M. Dufau (Louis-Émile-Revé). Pamphlet, pp. 32. 1897.

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The Western Druggist—Chicago. The Lloyd Library. Pamphlet, pp. 7. 1897.

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University of Wisconsin—Madison. Bulletins No. 358, 359 and 360 of the Agricultural Experiment Station.* 1897.

Author—Abdominal respiration. Migraine, its cause and radical cure. By Dr. J. H. Kellogg. Reprinted from Mod. Med. and Bact. Rev.

Schering and Glatz—New York. Eucaine hydrochlorate, a safe and reliable local anaesthetic. Pamphlet, pp. 80. May 1897.

—— Reprints from medical journals on glucol, xeroform, citrate and lactate of silver, guaiacol carbonate (duotal), creosote carbonate (creosotal) and betanaphtol-bismuth (orphol).

Lehn and Fink—New York. Papaïn: The vegetable pepsin, its origin, properties and uses. Pamphlet, pp. 18.

Stallman & Fulton — New York. Review and clinical notes on nosophene and its salts antinosine and eudoxine. Pamphlet, pp. 64. A short report on the use of antinosine in gynecology and obstetries by Dr. Rudolf Mueller. Pamphlet, pp. 7.

Reviews.

Grundriss der Arzneimittellehre von Dr. Oswald Schmiedeberg, o. Professor der Pharmakologie und Direktor des pharmakologischen Instituts an der Universität zu Strassburg. Dritte umgearbeitete Auflage. Ein Bd., pp. x, 386. Verlag von F. C. W. Vogel, Leipzig. 1895.

This outline treats briefly of that part of the materia medica upon which the pharmacologist is entitled to pass judgment. It is therefore neither a formulary nor a compendium on therapeutics. The latter falls within the domain of the practicing or clinical physician. The scope and modern methods of treatment of practical medicine on the one hand and of pharmacology on the other hand no longer permit of the union of both branches in one person if the risk of dilletantism in the one or the other is to be avoided. The pharmacologist is to give to the physician that fundamental knowledge of medicinal substances or drugs without which the latter would grope in the dark, but it is not his duty to state just what should be done in a certain case or just how under given conditions a remedy is to be applied. Pharmacology is to direct the path, but therapeutics lies without the domain of the former.

Pharmacology has in recent years received a great impetus. Students of physiology, hygiene and medicine have shown a decided preference for pharmacological problems as subjects for their dissertations. Chemical and pharmaceutical manufacturers have issued numerous circulars concerning the pharmacological value of their preparations. Pharmacological literature has, therefore, increased enormously and it requires a master mind to sift

* The bulletins and annual reports of this station are sent free to all applicants of Wisconsin upon request.

the valuable from that which is less valuable or even valueless. The object of this outline is to give a brief survey over the more important fields of the science. It is not intended as a reference book.

The authors views on the nature of pharmacological action as expressed in the introduction and elsewhere are exceedingly interesting. He shows himself in touch with the most modern views of chemistry. The idea that the physiological action of salts is due to their dissociated irons finds a clear expression (p. 242) possibly for the first time, although the detailed experimental proof was apparently brought for the first time last year in the work accomplished in the School of Pharmacy of the University of Wisconsin.

It is all the more to be regretted that the author in general lays aside the study of the relation between chemical constitution and physiological action, because, as he puts it, the latter is not due to chemical constitution, but to the stereo-chemical configuration of the molecule. Stereo-chemistry and the study of the ions are but chapters of the larger field of chemical constitution. Although we cannot "know" the stereochemical configuration of molecules, as the author states, yet the study of this important branch, crude as it may be in its forms of expression, has yielded results of the very greatest importance. Might the furtherance rather than the suppression of this study not also yield important pharmacological results, as they have already yielded exceedingly interesting general biological results?

E. K.

Anleitung zu analytisch-chemischen Uebungsarbeiten auf pharmaceutischem und toxikologischem Gebiete. Zugleich als II. Auflage von Prof. Dr. Arthur Meyer's "Handbuch der qualitativen chemischen Analyse." Bearbeitet zum Gebrauche in pharmaceutisch-chemischen Laboratorien von Dr. Ed. Schaer, Professor der Pharmacie an der Universität Strassburg und Dr. Paul Zenetti, Assistent am pharmaceutischen Institute daselbst. R. Gaertner's Verlagsbuchhandlung, Berlin.

Thirteen years have elapsed since Prof. Meyer, now of the University of Marburg, published his Handbuch der qualitativen chemischen Analyse, of which this new manual appears somewhat in the nature of a second edition. However, on account of the large amount of new material introduced into medicine and the changes in analytical methods that have been instituted since that time, a complete revision of the former work was found necessary. The new work is not intended to replace the more complete compendia of pharmaceutical-chemical analysis, but merely to serve as a laboratory guide, which purpose it serves admirably. We therefore do not find a compilation of methods, but only those are given which in the experience of the authors have proved themselves thoroughly trustworthy.

The subject matter is divided into five chapters, of which the first treats of the reactions of the pharmaceutically most important acids and organic preparations; the second, of the tests for inorganic and organic poisons in mixtures with animal or vegetable substances; the third, of the volumetric analysis of pharmaceutical preparations; the fourth, of some physiological-chemical analysis, as the analysis of urine and of milk, and the identification of blood-stains; the fifth, of the assay of crude drugs and galenical preparations. Although the book is primarily intended for students of pharmacy preparing themselves for the German "Staatsexamen", it would serve as an excellent guide to any pharmacist in this country who, not having had the advantages of a good laboratory course in analytical work, wishes to study up the subject by himself.

Richard Fischer.

Der Hotelprofessor. Ein Genrebildchen aus dem Universitätsleben von Fritz Gregorovius. Gera, Julius Becker. Pamphlet, 8°, pp. 31. 1897. M. 0.30.

Der Verfasser beschäftigt sich mit einer Erscheinung im Universitätsleben, die vielleicht auch auf dieser Seite des Ozeans anzutreffen sein möchte.

Ein Professor der Medizin, bedeutend als Spezialist für Magenkrankheiten und geschickter Weltmann, zieht durch seine glücklichen Kuren eine solche Masse von Patienten an, dass die Universitätsklinik nicht mehr ausreicht, um diese Hilfesuchenden zu fassen. Als Menschenfreund (?) lässt er sich überreden, eine Privatklinik einzurichten, die aber auch bald dermassen überfüllt ist, dass man zu den Hotels in der Stadt seine Zuflucht nehmen muss, um seine Patienten unterzubringen. Der Ruhm des Hotelprofessors, wie man ihn scherzweise nennt, erreicht den Gipfelpunkt, als er den Landesfürsten durch ein glückliche Kur vom Tode rettet, selbstverständlich gegen ein aussergewöhnliches Honorar für einen so aussergewöhnlichen Fall. Bei seiner Rückkehr werden ihm Ovationen von allen Seiten zu Theil. Als er nun aber noch gar einen Ruf an eine grössere Universität ablehnt, da bringen die Studenten ihm einen Fackelzug, die Stadt macht ihn zum Ehrenbürger, der Fürst ernennt ihn zum Geheimrath. Die Studenten wollen zwar beobachtet haben, dass seine Vorlesungen immer später anfangen und immer früher aufhören. Das Honoror für die private Behandlung musste von dem Professor, diesem Wohlthäter der Menschheit, schon längst in die Höhe geschraubt werden, selbstverständlich nur, um den Andrang zu hemmen und den Professor vor Ueberbürdung zu schützen, und nur Schwerreiche können sich den Luxus einer solchen Spezialbehandlung gestatten.

Das Lukrative dieser Praxis reift schliesslich den Plan, sich mit anderen Spezialisten, ebenfalls Dozenten der Universität, zu verbinden und ein ärztliches Kompagniegeschäft en gros zu gründen, welches unter der Firma Morgenstern, Wolf & Co. in das Handelsregister eingetragen wird. Die Skrupel seiner Kollegen, dass sie vielleicht hierdurch zu sehr von ihren wissenschaftlichen Studien abgehalten werden möchten und nicht im Stande sein dürften, auch so noch ihren Pflichten der Universität gegenüber zur Genüge nachzukommen, werden durch die schlagenden Argumente des Professors Morgenstern, der Seele des ganzen Unternehmens, beseitigt.

Die Firma hat einen stark hebräischen Beigeschmack, wie überhaupt die ganze Pointe des Buches antisemitisch zu sein scheint. Das Ganze liest sich leicht und ist treffend geschrieben, und wenn wirklich dergleichen Auswüchse bestehen sollten, so kann man dem Verfasser nur dankbar sein, dass er die Aufmerksamkeit aller Gebildeten auf eine solche Verirrung lenkt, die den allerschärfsten Tadel verdient. Was von solchen akademischen Lehrern für junge Aerzte gross gezogen wer

den, zeigt der Verfasser in der Person des Dr. Wöllner, der seiner Zeit als erster Assistent unter dem Professor Morgenstern gearbeitet hat, nun aber sich als praktischer Arzt in einem kleinen Städtchen niedergelassen. Er wird zu einem Manne gerufen, dem das Bein zerschmettert ist. Ehe er jedoch die Behandlung übernimmt, lässt er durch einen Boten bei dem Arbeitgeber des Verunglückten anfragen, ob er die Kurkosten für den Armen bezahlen werde. Als ihm darauf per Telephon eine bejahende Antwort zu theil und der Verunglückte seiner besonderen Sorgfalt empfohlen wird, da bricht diese ekelerregende Erscheinung, das Erziehungssubtrakt des Prof. Morgenstern, der ihm in seiner Praxis anscheinend vorleuchten soll, in die Worte aus, die jedem fühlenden Menschen die Schamröthe ins Gesicht treiben müssen: "Es ist doch ein Segen in diesen modernen Kulturerrungenschaften. Nun braucht der arme Kerl nicht noch eine Stunde in seinen Schmerzen dazuliegen." Wir fügen nur hinzu: Videant Consules!, dass das Volk nicht irre werde an den Universitäten als Pflegestätten der Wissenschaft im Dienste der Humanität.

Ernst Voss.

Handbuch der Mineralogie. Von Dr. C. Hintze, Professor an der Universität Breslau. Lief. 9—12. S. 1281—1842, mit 186 Abbildungen. Verlag von Veit & Co. in Leipzig.

A review of the first 8 fascicles of the second volume of this comprehensive work was already published in Vol. XII, No. 12 of the Pharm. Rundschau. At that time it was reported that the next, the 9th fascicle, would conclude this volume. The 4 fascicles now again on hand, which have appeared a short time ago and which are the closing ones of the same, show, however, that it was impossible to fulfill this promise, there being left many species to be described and in consequence a great amount of material. In these last fascicles we find treated the balance of the Silicates and Titanates, viz. Beryl, Leucit, Kieselzinkerz, Cerit, Pollux, Feldspathgruppe, Scapolithgruppe, Eudidymitgruppe, Petalit, Milarit, Eudialyt, Katapleit, Neptunit, Titanit, Guarinit, Tschewskinit, Perowskit, Knopit, Dysanalyt, Geikielith, Zeolith and wasserhaltige Silicate. A complete index of the described species closes this, the second volume.

All that has been said in the former review in regard to the completeness of this work should be repeated here, as the last fascicles reach the same high point, which the previous ones did. An idea of the extensive scope of this work may be got if we find, for instance, under Kalifeldspath (the description of which embraces 85 pages) the results of 329 analyses and under Natrolith those of 81.

Like the former ones these fascicles again prove the great diligence and care as also the thoroughness of the author, not less, however, the painstaking of the publisher in regard to the fine execution of the work. It is certain, therefore, without doubt, that the first volume now appearing will stand in the same high rank as its predecessor.

To all mineralogists, particularly to those possessing already the volume now finished, there will, consequently, be left but one desire, viz. that the next volume may soon be in their hands, if possible in a shorter time than the preceding one.

Edo Claassen.

Koehler's Neueste und wichtigste Medicinal-Pflanzen in naturgetreuen Abbildungen mit kurz erklärendem Texte. Ergänzungsband zu dem in den Jahren 1883 bis 1890 erschienenen Hauptwerke. Herausgegeben von Dr. Max Vogtherr. Druck und Verleger Fr. Eugen Koehler, Gera-Untermhaus. Lieferungen VIII—XI.

Numbers VIII to XI of this valuable work merit the same high praise that has been bestowed on the earlier parts. The quality of the plates, from the standpoint of their artistic merit as well as from that of their value as a means of instruction, is high.

The plates included in the numbers at hand illustrate the following plants: *Sinabis alba* L., *Cicuta virosa* L., *Duboisia myoporoides* R. Br., *Chrysanthemum inodorum* L., *Aspidiosperma Quebracho* Schlecht., *Chrysanthemum Parthenium* Pers., *Landolphia comorensis* (Boy.) K. Sch. var. *florida* (Benth.) K. Sch., *Chrysanthemum cineriaefolium* Benth. & Hook., *Anthriscus silvestris* Hoffm., *Conyza squarosa* L., *Andonis cirnalis* L. *and Castilloa elastica* Cew.

The text represents a concise summary of our knowledge concerning the plants discussed and their products. Many points of special interest might be referred to, but a single reference will suffice. The synopsis of the Eucalypts included in the discussion of *Eucalyptus globulus* Labil. gives the reader who lacks the large works on this important genus by Bentley, Müller, Maiden and others, a valuable summary of characteristics.

In these days when the future of the rubber supply is much under consideration, the diligent search for new resources has been rewarded by the discovery of several plants not formerly regarded in this connection. Hence the attention paid to rubber-producing plants here seems likely to be favorably received.

In case a reading knowledge of the German text is lacking, the plates alone are still worth the subscription price to any one wishing high-class illustrations.

Rodney H. True.

Chemie und Physiologie des Malzes und des Bieres. Von Dr. Eugen Prior, Vorstand der vom Kgl. Bayer. Staate subv. Versuchsstation für Bierbrauerei zu Nuernberg. Ein Bd., pp. x, 597, nebst Tabellen. Verlag von Johann Ambrosius Barth in Leipzig. 1896. Brosch. M. 11.00; geb. M. 12.00.

In Feb. 1894 the German Imperial Council approved of the examination of a class of chemists to be known as Nahrungsmittel-Chemiker. It was rightly supposed that the chemistry of foods and beverages would thereafter receive more attention on the part of students of chemistry as well as on the part of specialists. Under the general direction of Drs. Geissler (Dresden), Hanausek (Vienna), Medicus (Wuerzburg), Thiel (Darmstadt), and with the aid of a number of specialists the above mentioned publishers began a series known as the Bibliothek für Nahrungsmittel-Chemiker. The volume before us constitutes volume five of this library. The volumes already published are:—

Bd. 1. Die Nahrungsmittel-Gesetzgebung im deutschen Reiche und in den einzelnen Bundesstaaten von Dr. Arthur Wuerzburg.

Bd. 2. Kurzes Lehrbuch der Nahrungsmittel-Chemie von Dr. H. Roettger.

Bd. 3. Instrumente und Apparate zur Nahrungsmittel-Untersuchung von Dr. Mayrhofer.

Bd. 4. Originalarbeiten über Analyse der Nahrungsmittel, zusammengestellt und mit Anmerkungen versehen von Dr. Julius Ephraim.

It will be seen from the above list that the series is more or less disconnected and that each volume, a monograph on its respective subject, is a unit by itself. Yet all have bearing on the same general subject of the analysis of food stuffs and beverages.

This series is to supply the student with the essentials of that branch of analytical chemistry which he must specialize if he intends to become a food chemist. In the hands of the examined chemist it will prove a valuable reference library and enable him to penetrate more deeply into those subjects in which he is particularly interested.

Although the volumes are more or less disconnected as to subjects it becomes readily apparent from the above list that the subjects of volumes one, two and three are quite general in character, that that of volume four is less so, and that the volume under consideration takes up the subjects of a single industry.

With the exeption of the work of Moritz and Morris published in England and translated into the German by Windisch there appears to be no larger monograph on the subject of malt and beer which does not go into technical details of the subject of brewing. The volume before us is excellently planned. It does not impart analytical information simply according to the rule of thumb. The chemistry of the malt producing materials e. g. is first taken up in considerable detail, the chemical changes brought about in the process of malting are discussed and finally the various methods of analysis are presented. Thus a scientific foundation is laid for an intelligent understanding of the analytical processes and of the results obtained. This is not only generally desireable but absolutely essential, e. g. in cases where expert testimony is to be given. The entire series can not be recommended too highly to chemists interested in the subject of food stuffs and beverages. *E. K.*

Sur le Dosage de la Caféine. Thèse pour l'obtention du diplôme de Pharmacien de 1re classe. Par Eugène Tassily, Etudiant de l'École Supérieure de Pharmacie de Paris. Société D'Éditions Scientifiques.

The author has divided his work into two parts, the first being historical and including descriptions of previously proposed processes of extraction and estimation of caffeine in plants, while the second contains the results of his own experimental work. This latter is taken up with a critical study of the various processes in use for the estimation of caffeine; with the determination of various properties of this alkaloid, as solubility, effect of heat, of alkalies and acids, etc.; and lastly, a process of estimating caffeine in coffee, proposed by the author on the basis of these results. The bibliographical index which completes the pamphlet will be very valuable to anybody intending to do work along this line.

Richard Fischer.

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EDITORIAL.

It is well known on this side of the Atlantic that Europeans are only too apt to give more attention to American idiocyncracies than to matters of real import and genuine worth. It must, therefore, have been all the more gratifying to the U. S. P. Revision Committee to learn how favorably its activity since the publication of the last edition of the Pharmacopœia has been commented upon by the pharmaceutical press of various European countries.

It is quite generally known that at the beginning of each decade a committee is elected by the General Convention for the purpose of revising the old and the publishing of a new edition of the U. S. Pharmacopœia. It is possibly less generally known that, under the able chairmanship of Dr. Rice, this committee has not been idle since the first copy of the seventh edition was introduced to the pharmaceutical public at the World's Fair meeting of the American Pharmaceutical Association in 1893.

Several months ago copies of a Digest of criticism on the United States Pharmacopœia, seventh decennial revision (1890), published by the Committee of Revision and Publication of the Pharmacopœia of the United States of America (1890 to 1900), were sent to all incorporated medical and pharmaceutical associations, colleges, etc., which were represented by delegates at the Seventh Decennial Convention for revising the Pharmacopœia held at Washington in 1890, and to others interested directly in the improvement of our national medical and pharmaceutical code. The volume of 183 pages which was distributed constitutes Part I and comprises abstracts of papers up to July 1, 1896.

It was for this manifestation of activity that the "practical" American received favorable mention on the part of his European colleagues. Compared with most other countries, the pharmacists of the United States have through their Committee demonstrated a very commendable activity. It now remains for the recepients of the Digest to make good use of the book and not to relegate it to disuse after probably having acknowledged its receipt with a few flattering remarks.

Without wishing to imply anything derogatory, it may not be improper to suggest a division of labor in the compilation of the Digest for the future. It is generally conceded that the various branches of pharmaceutical science cannot be mastered by a single person. If the Digest were to be merely a catalogue of titles, the principal accomplishment of the compiler should lie in the direction of linguistic attainments. As soon, however, as the contents of innumerable papers on subjects of pharmacopœial interest are to be interpreted and to be boiled down to a sentence or two, something more than mere linguistic attainments and a general scientific education become a necessity in order to accomplish the best results. Here the specialist may with propriety be requested to render service.

The Revision Committee is divided into numerous subcommittees. May not the members of these subcommittees be called upon to render service

other than read circulars sent out by the chairman and vote aye or nay? In looking over the list of circulars it would appear that with few notable exceptions the work since the publication of the last Pharmacopœia has been done principally by persons not members of the Revision Committee. It has even been hinted several years ago that, while the revision was in progress, certain members considered their membership principally as an ornament.

Although the Digest is a compilation of considerable value and represents a line of activity not to be underestimated, it may not be amiss to point out at this time that the U. S. P. Revision Committee, under the leadership of its Chairman, about two years ago inaugurated an activity the importance of which can as yet be scarcely realized.

The new Pharmacopœia had hardly been published when the late Dr. Curtman reported the results of investigations that were in progress while the Pharmacopœia was being printed. The names of three or four other members also appear as contributors on the list of circulars.

Of the voluntary activity of such men the Committee can always rest assured. There are also others who have gladly offered their services gratuitously when occasion offered. About a year after the organization of the Research Committees in 1894, the Committee began to secure the assistance of young and promising scholars who could otherwise not have been of any service to the Revision Committee, and who, moreover, might have been lost to science. To interest them in pharmacopœial research, therefore, implied a double gain. The benefits of this system are not to be measured solely by the immediate results obtained, nor by the number of pages of reports submitted to the general committee.

There exists still another form of pharmacopœial revision activity in this country, of which possibly but few European pharmacists are aware. Not only does the American Pharmaceutical Association have a committee on the revision of the Pharmacopœia, but many state associations and other organizations possess similar committees. Some of these committees, or more correctly, certain members of such committees have from time to time displayed commendable activity and have submitted reports of no mean value. The committees have the great advantage of bringing the large body of practising pharmacists into direct sympathy with the work of revision.

A serious drawback, however, to most of these committees has been that they lacked permanency. After a competent person had made a commendable report, he has frequently been displaced by an incoming president, too ignorant often to know a good thing even when forced to see it.

So long as such committees lack permanency and are appointed annually without regard for the fitness of its members for the peculiar kind of work demanded of them, so long will their results fall short. Such work requires not only men with scientific ability and long experience, but men with an enthusiasm and a love for their calling. Their reports must not be made up at the last moment and consist of undigested suggestions obtained here or there at random, but should represent a solid year's work. Through these committees the pharmacists have a voice in the revision of their standard work. They may rest assured that, if they make intelligent use of this opportunity, their work will not remain unnoticed nor their suggestions unheeded.

The University of Michigan and the University of Wisconsin have each at their recent commencements graduated three men from the four years' courses. Although this number may seem insignificant to some, the fact is of no little import. It is five years ago that the University of Wisconsin offered a four years' course in pharmacy on the basis of other collegiate courses at the University. The course, however, could not be announced in the catalogue until the following year. Both in Ann Arbor and Madison there had been academic students who desired training in pharmaceutical studies; also pharmaceutical graduates who wanted a broader education than the two years' courses in pharmacy offered. Besides placing pharmacy on an equal basis with the other sciences and arts taught at these universities, it was expected that such a course would have a wholesome influence on the students in the shorter courses in calling their attention to the fact that there was more to pharmacy than could be learned in two years even at the best college or university. The student of pharmaceutical education had to be painfully conscious of the fact that some of the best students in pharmacy left their calling because it was too narrow to satisfy their mental aspirations. There had been a great deal of talk at pharmaceutical conventions about increasing requirements and adding to the courses existing, but no decided step was taken.

By some the course taken was considered bold, even suicidal; by others it was ridiculed and remarks about future 10 years' courses and the like were made in no complimentary vein. Yet after it had been demonstrated that students would enter such a course even before it could be announced in the catalogue and that there were other institutions to consider the matter favorably, the

tenor of the remarks gradually changed. It is needless to state that such courses will never attract hundreds of students. Such indeed would prove a calamity rather than a blessing. On the other hand the fact that the University of Wisconsin has had seven graduates in five years and the University of Michigan a similar number in less time, is more than the most ardent advocates of this course dared to hope for five years ago.

Incidental to the development of the four years' course there has developed a three years' course. Students who wanted more than could be offered in two years, but for either lack of preparation or financial reasons could not enter the four years' course, made necessary a compromise course between the older two years' university course in pharmacy inaugurated by Michigan years ago and the new four years' course. The result has been that during the past year more than two-thirds of the students at the University of Wisconsin were taking courses longer than the two years' course.

This course, though not on as liberal a basis, yet allows of an arrangement of pharmaceutical studies analogous to that of the four years' course. This, even without the highly desirable choice of elections, is in itself a great gain.

To survey the advancements that have been made in pharmaceutical education during the past five years, is on the whole encouraging. In addition to the advancements made by state universities, the older colleges of pharmacy have not been idle. Their courses have been lengthened and strengthened. The former evening work is giving way more and more to day work. Laboratory courses, though short, are now obligatory in all departments of the better colleges. Longer courses are also offered though optional. Though drug-store experience before graduation still has its staunch advocates in the colleges, yet there is possibly not a single college of repute that does not offer a course for the graduation from which this experience is no longer required. Though the degree is a different one, yet these same colleges permit their graduates from these courses to secure drug-store experience and then to take the degree calling for such experience without further study or examination. Practice and theory evidently collide, but the practice will, no doubt, ultimately prevail.

But more significant than this unacknowledged victory of rational educational principles over old traditions is the fact that these colleges as well as the universities are more and more fostering the scientific spirit. To a small extent this is made apparent by the affiliation of independent colleges with broader institutions of learning, or by at least securing the semblance of such affiliation. To a greater extent this is inwardly manifested, though possibly less generally recognized, by the recruiting of the instructional force with young men who possess a thorough scientific education. The changes that have been made in this direction during the past few years speak volumes. Embued with an enthusiasm and a love for science for its own sake these teachers and investigators act as a leaven, the results of which are already visible.

On another page attention is called to the appointment, by the President of the American Pharmaceutical Association, of delegates and alternates to the International Pharmaceutical Congress to be held in Brussels. The Review in its former garb of Pharmaceutische Rundschau has repeatedly called attention to the character of such international conferences and to the meagre results attained. Only a few years ago such an international congress — international in name only — convused in Chicago in connection with the World's Fair. Although the conditions seemed extremely opportune, and although the American Pharmaceutical Association contributed liberally to make the affair a successful one, the conference proved an utter failure. That such a congress was ever held was soon forgotten. Certain Europeans even had the discourtesy to ignore it entirely. The only reason why certain members of the American Pharmaceutical Association have not forgotten the Congress entirely is to be sought in the strange fact that the proceedings of this would-be international affair have not yet been published.

On the one hand it might be argued that the American Pharmaceutical Association ought to have learned a lesson and should hereafter steer clear of all "tangling alliances" with further international congresses arranged by some society for its own aggrandizement. On the other hand it may be admitted that our national organization acted in the most charitable manner to itself and others by quietly appointing a committee to represent American pharmacy at Brussels. The mere appointment of such a committee will be favorably received by our Belgian confrères, whose undertaking has received extremely little favorable comment in Europe. In fact, several European societies have taken the trouble to publicly announce that they would not send delegates to a conference for which there absolutely appeared no *raison d'être*, while various journals maliciously pointed out the fiasco of previous congresses.

ORIGINAL CONTRIBUTIONS.

Algæ and Antiseptics.

By Prof. *Rodney H. True.*

The first comprehensive application within the writer's knowledge of the doctrine of electrolytic dissociation as an explanation of the action of dissolved chemical substances on living organisms, occurs in Schmiedeberg's[1] work on pharmacology. In this book, the doctrine is clearly stated and illustrative cases cited; no experimental proof being offered. The author seems to regard this explanation as that most satisfactorily accounting for the well known facts of therapeutics and physiology.

The first published results known to the writer, following investigations instituted with the stated object of determining how far the theory of the electrolytic dissociation of dilute, dissolved substances could be shown to explain the action of these substances on living organisms, constitute a paper by Kahlenberg and True.[2] In this paper the toxic action of electrolytes was studied with the roots of the white lupine, *Lupinus albus* L. In a subsequent article,[3] the authors discussed the theory and presented the evidence in greater detail. At the same time a paper by Heald[4] gave results obtained by repeating the same work with the roots of *Pisum sativum*, *Zea Mais* and *Cucurbita Pepo*.

Paul and Kroenig[5] followed the line of argument adopted in the above papers to explain the action of antiseptics on bacteria. Scheuerlen and Spiro[6] also apply this theory to the action of antiseptics on microbes.

In view of this chronology, the words of the reviewer of the article by Paul and Kroenig in the Pharmaceutische Centralhalle[7] of recent date are seen to be misleading when they say the article by these authors "um so mehr Beachtung verdient, als es der erste Versuch ist, die Gesetze des chemischen Reactionsverlaufes auch auf das lebende Protoplasma auszudehnen." Since Kahlenberg[8] has recently discussed the last two papers and incidentally, priority claims, more on this point is hardly necessary.

Another article by Kroenig and Paul[9] on the chemical basis on which our knowledge of the action of antiseptics rests, has recently appeared. The main body of results there incorporated is to be found in the article by the same authors cited above. They indicate a number of instances of early articles, in which the dissociation theory was invoked to explain phenomena. One article by Dreser[10] deals with a group of mercury compounds, the other[11] with anabic acid and a number of its compounds. These articles deal with but small groups of substances and are entirely inadequate as evidence on which to rest any general application of the modern theories of solutions to physiology. I still maintain that the first attempt to make a broad application of these views and substantiate it by a large body of systematically arranged evidence was made by Kahlenberg and True. If Paul and Kroenig have extended the laws of the chemical reaction to living protoplasm, it follows, then, that this has been done prior to their work by these authors.

Thus far, the conduct of seed-bearing plants and of the bacteria only has been taken into account.

During the past year, Mr. C. G. Hunkel and the writer have endeavored to ascertain how far this theory is appliable to the phenols. The questions of molecular structure and the toxic values of various radicles have also been borne in mind. The white lupine, *Lupinus albus* L., because it has been much studied and is very sensitive, has been used as a subject for experiment.

Wishing to operate with a plant of a type radically different from both the seed plant and the bacterium, the writer has made a series of experiments with the common Alga, the brook silk, *Spirogyra* sp. This plant possesses a number of advantages for this purpose. It is abundant and has been much studied. Its great delicacy of structure makes disarrangements of its cell contents easily discernable. The low grade of its organization compared with the seed plants makes it an object of rather generalized physiological properties and offers less liability to derangements than the highly specialized organisms.

Its extreme sensitiveness to the heavy metals was demonstrated by C. von Nägeli[12] who found that water distilled from a copper vessel was fatal to this plant because of the copper it contained. Copper salts were found to be deadly in inconceivable dilute solutions. One part of copper was found to make 100 million parts of water almost instantly fatal to this Alga. Silver, mercury, zinc, iron and other heavy metals proved to be injurious to a degree greater or less. This is far beyond the limit found by Kahlenberg and True[13] to be fatal to higher plants. Lupines first grew in the following solutions containing the heavy metal, as did probably the water in Nägeli's experiments also, as simple ions.

Substance.	Concent. of solution.	Proportion of metal to H_2O.
$AgNO_3$	1 grm. mol. in 409,600 litres	1:3,792,000
$CuCl_2$	1 " " " 51,200 "	1: 810,100
$FeSO_4$	1 " " " 25,600 "	1: 457,140
$CuSO_4$	1 " " " 25,600 "	1: 436,120
$HgCl_2$	1 " " " 25,600 "	1: 128,000

[1] Schmiedeberg, O.: Grundriss der Arzneimittellehre. 3. Aufl. Leipzig, 1893.

[2] Kahlenberg and True: On the Toxic Action of Dissolved Salts and their Electrolytic Dissociation. Read at 47th Annual Meeting of Am. Med. Assoc., May 5—8, 1896. Journ. Am. Med Assoc., July 18, 1896.

[3] Kahlenberg and True: On the Toxic Action of Dissolved Salts and their Electrolytic Dissociation. Bot. Gaz. 22, p. 81.

[4] Heald: On the Toxic Effect of Dilute Solutions of Acids and Salts upon Plants. Bot. Gaz. 22, p. 124.

[5] Paul and Kroenig: Ueber das Verhalten der Bakterien zu chemischen Reagentien. Zeitsch. f. physik. Chemie XXI, p. 144.

[6] Scheuerlen and Spiro: Münch. Medicin. Wochenschr. 1897, No. 4.

[7] Pharm. Centralh. 38, No. 20, p. 313.

[8] Kahlenberg: The Relative Strength of Antiseptics. Pharm. Rev. 15, p. 68.

[9] Kroenig and Paul: Die chemischen Grundlagen der Lehre von der Giftwirkung und Desinfection. Zeitschr. f. Hygiene u. Infectionskrank. 25, p. 2, 1897.

[10] Dreser, H.: Zur Pharmakologie des Quecksilbers. Arch. f. Experim. Path. u. Pharm., Bd. 32, (1893).

[11] Ostwald, W.: Zeitschr. f. physik. Chemie 13, p. 77, (1894).

In a review of Dreser's article (see above) results found by Pfeffer in Locomotorische Richtungsbewegungen durch chemische Reize. Unters. a. d. bot. Inst. zu Tübingen, Bd. 7, 1884, also Ueber chemotactische Bewegungen von Bakterien, Flagellaten und Velvocineen, ibid. Bd. 2.

[12] Nägeli: Ueber Oligodynamische Erscheinungen in lebenden Zellen. Denkschr. d. Schweiz. naturforsch. Gesellsch. 33, 1, 1893.

[13] Kahlenberg and True: Bot. Gaz. 22, pp. 96—105.

Although sensitive to the heavy metals in a degree far exceeding the lupines, *Spirogyra* seems to be considerably more tolerant toward acids. Lupine roots placed in various concentrations of hydrochloric acid died in all dilutions stronger than 1 grm. mol. in 6400 litres. A long list of acids was tested and in all mono-basic acids dissociating completely, this same limit was found. This limit may be regarded as the toxic value of one acid hydrogen in completely dissociated solutions for lupines and may be briefly expressed as a ratio $\frac{1}{6400}$. In accord with this, strongest solutions of di-basic acids undergoing complete dissociation that allowed growth, was 1 grm. mol. of the acid in 12,800 litres.

For *Spirogyra*, the first concentration in which a majority of the filaments lived after exposure for 24 hours to a completely dissociated monobasic acid, HCl, was 1 grm. mol. of the acid to 800 litres, four times the concentration found for lupines.

The first concentration of sulphuric acid in which a majority of the filaments were found to live was 1 grm. mol. in 1600 litres. From these results, the toxic value of one acid hydrogen in completely dissociated acids for *Spirogyra* may be expressed as before by a ratio $\frac{1}{800}$. It appears that in dilute solutions of acids, for *Spirogyra* as well as for the lupine, the number of hydrogen ions present is a measure of the toxic action of these solutions.

The toxic action of solutions of various phenols on roots of lupines was found to be much weaker than that of the above mentioned substances. Phenol, $C_6H_5(OH)$, first failed to kill the radicles in a concentration of 1 grm. mol. in 400 litres. The introduction of more (OH) groups as in resorcinol, $C_6H_4(OH)_2$, lessened somewhat the toxic action of the fresh solution toward the lupines.

Spirogyra seems to be less sensitive toward phenols as a rule than are lupine roots. The first concentration of phenol in which a majority of *Spirogyra* filaments were found to live after 24 hours exposure was 1 grm. mol. in 200 litres. The effect of the presence of two (OH) groups was not accurately determined. Hydroquinone, $C_6H_4(OH)_2(p)$, has been studied thus far more than its isomers. It changed its appearance and physiological properties in dilute solutions to such a degree and with such speed that the action of the unchanged hydroquinone was not ascertained with certainty. It seems, however, that before changes of color set in, it is not much more poisonous than phenol. Since the solution was found to become more poisonous toward *Spirogyra* as its color deepened, either one of two things seemed likely. Either some nascent action took place during the breaking down of the hydroquinone or some more fatal substance was produced. In order to render the breaking down complete, in the hope of obtaining a stable solution, a flask containing about 750 cc. of a solution of 1 grm. mol. in 50 litres of water was placed in strong sunlight with loosed stopper for several days. The action of the resulting substance on *Spirogyra* was then studied with rather surprising results. It was found to be fatal to Algæ in a concentration of 1 grm. mol. of the original hydroquinone in 25,600 litres. Since its previous exposure to light and air had diminished the probability of subsequent nascent action, it seemed that the hydroquinone had been broken down into some exceedingly vicious product. Thinking that some error might have crept in, the experiment was repeated with similar results. This very poisonous solution was of the color of strong coffee, and was neutral to litmus paper. When a concentration of 1 grm. mol. of hydroquinone to 50 litres was taken into the mouth, no taste could be with certainty detected, and no irritation was noted. Considering that the toxic action of phenol, one of the standard antiseptics, is some hundred-, yes, thousand-times stronger than the concentration of this product fatal to *Spirogyra*, it seemed well to test its action toward bacteria. At the suggestion of the writer, Mr. Robert Gay, a student of the University of Wisconsin, made a series of cultures of *Staphylococcus pyogenes aureus*, the pus-forming germ of wounds. Vegetating germs were exposed to solutions varying in strength from 1 grm. mol. in 50 to 1500 litres for periods of time varying from 15 to 45 minutes. An exposure of 15 minutes proved harmful to the germ as the dilution became greater, in the weakest solution but one-fifth of the number of colonies found on the control plates being found. An exposure for 30 or for 45 minutes proved very fatal, in no dilution after this exposure did more than two colonies appear. The antiseptic action of this product seems, therefore, beyond doubt.

Mr. W. D. Frost, assistent in bacteriology at the University of Wisconsin, is now giving this substance a more thorough study from the standpoint of the bacteriologist.

Pyrocatechin, $C_6H_4(OH)_2(o)$, seems to have to some degree a similar property, to what extent is not yet determined.

With the thought that perhaps even the more stable phenols might under the treatment given above to hydroquinone also undergo a similar change, a solution of phenol, 1 grm. mol. in 50 litres, was likewise exposed and then tested in regard to its action on *Spirogyra*. No change in its toxic strength was observed.

The introduction of various groups was found to influence the poisonous action quite materially in instances. The presence of a (COOH) group, as in salicylic acid $C_6H_4(OH)(COOH)$ is an example. The boundary concentration determined in the manner described above for *Spirogyra* lay near 1 grm. mol. in 1000 litres. When the acid hydrogen was replaced by a (CH_3) group, methyl salicylate, the toxicity was distinctly lessened, *Spirogyra* first surviving in 1 grm. mol. in 600 litres. Whether this represents the action of methyl salicylate or of some product or products from it, I cannot say.

When one oxy-methyl group (OCH_3) is present instead of an (OH) group as in anisol, $C_6H_5OCH_3$, or guaiacol, $C_6H_4(OH)(OCH_3)$, the toxic action seems to be little affected.

To what extent electrolytic dissociation plays a rôle in determining the toxic properties of the phenols, I will not undertake to discuss, it being, however, probably in a far less degree than in the inorganic acids and salts.

From what has been said, the preliminary nature of the results above given may be inferred. It is hoped to continue as soon as may be work along these lines and at some later day attempt to answer more satisfactorily questions now merely touched upon or hinted at.

Pharmacognostical Laboratory,
University of Wisconsin.

Medicinal Plants of Brazil.*

By *Dr. Theodor Peckolt of Rio de Janeiro.*

Nectandra cymbarum Nees. Diese Species kommt in den Staaten Pará und Amazonas vor und heisst daselbst *Paó de sassafraz, Sassafraz do Noste, Sassafraz de Pará.*

Es ist ein Baum von 20 bis 30 Meter Höhe mit hübscher, dichtbelaubter Krone. Die Blätter sind langgestreckt-länglich und lancettlich, oberseits glänzend dunkelgrün, unterseits bräunlich. Die Blüthen sind unbekannt. Die Beere ist oval, 55 mm. hoch, fast bis zur Hälfte vom Becher umschlossen.

In den kalten Monaten Juni bis August wird durch Einschnitte in die Rinde ein flüchtiges Oel gewonnen, welches in Pará als *Oleo de sassafraz* verkauft wird. Dasselbe ist gelb, dünnflüssig, von brennendem Geschmack und stark aromatischem Geruch, ähnlich dem einer Mischung von Kampher und Lorbeer. Es wird in der Dosis von 2 bis 4 Tropfen als kräftig krampfstillendes Mittel, sowie als Einreibung bei Rheumatismus medizinisch angewandt.

Die Rinde und Blätter wirken harn- und schweisstreibend. Die Rinde ist graubraun, mit kleinen, hellergefärbten Wärzchen besetzt, von gewürzhaft bitterem Geschmack. Als blutreinigender Trank werden 30 grm. zu 300 grm. Colatur verwandt und dreimal täglich ein Kelchglas genommen. Als Tonicum dient eine mit Zuckerbranntwein bereitete Tinctur, und zwar zur jedesmaligen Mahlzeit ein Theelöffel voll. Das Decoct wird zu Bädern bei Rheumatismus und als Waschung bei Hautkrankheiten verwandt.

Dr. Cursino de Moura hat Versuche in Betreff des schweisstreibenden Effectes gemacht und fand, dass die Rinde am schnellsten eine mässige schweisstreibende Wirkung hervorbrachte. Dieselbe wirkt nicht so energisch wie *Pilocarpus, Ottonia* etc. doch hat dieselbe auch nicht die oft beobachteten nachtheiligen Folgen der letzteren. Die schweisstreibende Dosis war: Blätter 30 grm., Rinde 20 grm., Holz 35 grm.; jedes zu 250 grm. Colatur, alle 10 Minuten ein Kelchglas voll.

Die stark aromatisch riechende Wurzel dient als Roborans. Dieselbe soll noch reichlicher flüchtiges Oel liefern als der Stamm.

Die Indianer benutzen das flüchtige Oel als Andidot bei Schlangenbiss. Sie behaupten dass der Geruch desselben die Schlangen betäubt und sie dadurch zum Beissen unfähig macht. Die Waldbewohner reiben die unbedeckten Körpertheile mit dem Oele ein um sich vor den lästigen Mücken zu schützen nnd behaupten auch dass sich keine Schlange nähert.

Nectandra leucothyrsus Meissn. ist im Staate Rio de Janeiro unter den folgenden Namen bekannt: *Canella branca da vargem* — weisser Zimmt der Ebenen; *Annuiba do brejo* und *Canella branca do brejo* — weisser Sumpf-zimmt.

Ein dünnstämmiger, bis 15 Meter hoher Baum mit dunkelbraunen Aesten, und länglichen und lancettlich zugespitzten Blättern, welche oberseits glänzend dunkelgrün, unterseits matt gelbbräunlich sind. Die achselständige Rispe ist mit weissen,

Nectandra cymbarum Nees. This species is found in the states Pará and Amazonas and is there called *Paó de sassafraz, Sassafraz do Noste, Sassafraz de Pará.*

It is a tree of from 20 to 30 meters in height with a fine crown of dense foliage. The leaves are elongated-oblong and lanceolate, the upper surface shining dark-green, the under surface brownish. The flowers are unknown. The berry is oval, 55 mm. in length, surrounded by the cupule almost to the middle.

In the cold months from June to August, by means of incissions in the bark, a volatile oil is obtained which is sold in Pará as *Oleo de sassafraz.* This oil is yellow, thinly-fluid, has a burning taste and a strongly aromatic odor similar to that of a mixture of camphor and laurel. In doses of from 2 to 4 drops it is used medicinally as a powerful remedy for cramps and is rubbed on externally in cases of rheumatism.

The bark and leaves act as diuretics and sudorifics. The bark is grayish brown studded with small bright colored protuberances of an aromatic bitter taste. As a blood-purifying drink 30 grm. to 300 grm. of colature are used and a wineglassful taken three times a day. A tincture prepared with rum serves as a tonic and a teaspoonful is taken at each mealtime. The decoction is used as a bath in rheumatism and as a wash in skin-diseases.

Dr. Cursino de Moura has made experiments relative to the sudorific effect and found that the bark produced most speedily a moderate sudorific action. It does not act as energetically as *Pilocarpus, Ottonia* etc., but it also lacks the often noted disadvantageous effects of the latter. The sudorific dose was: leaves 30 grm., bark 20 grm., wood 35 grm., each in 250 grm. of colature, a wineglassful every ten minutes.

The strongly aromatic-smelling root is used as a tonic. It is said to furnish volatile oil still more richly than does the trunk.

The Indians use the volatile oil as an antidote for snakebite. They declare that the odor of it stupifies the snake and renders it incapable of biting. The forest-dwellers rub the uncovered parts of their bodies with the oil to protect themselves from the troublesome mosquitoes and they also declare that no snake will approach.

Nectandra leucothyrsus Meissn. is known in the state of Rio de Janeiro under the following names: *Canella branca da vargem*—white cinnamon of the plains—*Annuiba do brejo* and *Canella branca do brejo*—white swamp-cinnamon.

A tree of about 15 meters height, with slender trunk, dark brown branches, with oblong lanceolate-acuminate leaves, whose upper surface is shining dark green, the under surface dull yellowish brown. The axillary panicle is made up of white

* Continued from p. 135. Translated for the Review by Dr. R. H. True, Asst. Prof. of Pharmacognosy at the University of Wisconsin.

wohlriechenden Blüthen besetzt. Die Beere ist oval von der Grösse einer kleinen Olive, bis zu ⅓ von der Cupula umgeben.

Die Rinde, reich an Gummi, ist ein vielbeliebtes Wundmittel. Von der Epidermis befreit wird dieselbe mit einem Messer fein geschabt und auf Leinen gestrichen. Dieselbe klebt sehr stark und ersetzt dem Volke das Heftpflaster. Das Holz mit bräunlichem Splint ist leicht und porös. Es wird zu Bauten fast nie benutzt da es vorzugsweise von Termiten beschädigt wird.

Vorzügliches Bauholz, auch zu Schiffsbauten, liefern folgende Arten: —

Nectandra polyphylla Nees. Diese kommt im Staate Amazonas vor und heisst daselbst *Canella de follia larga* und *Louro de follia larga*— breitblättriger Zimmt und Lorbeerbaum. Sehr dickstämmig und bis 35 Meter hoch.

Nectandra nitidula Nees, welche in den Nordstaaten bis südlich nach dem Staate Santa Catharina vorkommt, heisst *Canella amarella* — gelber Zimmt — und *Embuia amarella*. Ein dickstämmiger, kleiner Baum mit weissbräunlichem Holze, welches vorzugsweise zu Brettern benutzt wird. Sp. Gew. 0.744. Zu gleichen Bauzwecken dient im Staate Rio de Janeiro die Varietät *latifolia* Nees, welche dieselbe Volksbenennung wie *N. polyphylla* hat.

fragrant flowers. The berry is oval, the size of a small olive, one third surrounded by the cupule.

The bark, rich in gum, is a favorite vulnerary. Freed from the epidermis it is scraped fine with a knife and spread on linen. It adheres powerfully and answers among the natives for sticking-plaster. The wood with brownish alburnum is light and porous. It is almost never used for building, since it is especially liable to injury from white ants.

The following species furnish excellent building material, even for ship-building.

Nectandra polyphylla Nees. This occurs in the state Amazonas where it is called *Canella de follia larga* and *Lauro de follia larga*—broad-leaved cinnamon and laurel tree. Trunk very thick and about 35 meters high.

Nectandra nitidula Nees, which is found in the northern states and south as far as the state Santa Catharina, is called *Canella amarella*, yellow cinnamon—*Embuia amarella*. A small tree with a thick trunk of whitish brown wood, which is used preferably for lumber. Sp. Gr. 0.744. In the state Rio de Janeiro the variety *latifolia* Nees, which has received the same native designation as *N. polyphylla* serves similar building purposes.

MONTHLY REVIEW.

Annual Reports.

A Resume of Progress in the Chemistry of the Carbohydrates during 1896.*

By *W. E. Stone.*

Activity in this field has been unabated during the past year, and it becomes more and more evident to the student of the carbohydrates that these bodies present opportunities for the study and illustration of chemical theories in no way exceeded by their very great practical and technical importance. The following review is intended to include all of the publications appearing in the chemical journals during the year, although the practical impossibility of making the record complete is fully recognized. Purely technical papers have for obvious reasons not been included. The classification employed in former years has been retained.

General Reactions.—The continued study and development of new reactions among the carbohydrates has been so fruitful that these bodies may now be fairly regarded as among the most reactive of the general classes of carbon compounds. A large number of characteristic reactions have now been well studied, involving the general principles of polymerization, condensation, oxidation, reduction, ether, and ester formations, etc. Contrary to the former view that the carbohydrates were extremely unstable and sensitive compounds, it now appears that they are capable of undergoing the most manifold changes, not alone as regards their chemical features but in their physical properties as well. Indeed in this latter field it appears that the sugars offer the best known examples for the illustration of the principles of stereochemistry, while the latest researches indicate that sugar molecules are unstable systems in which a variety of intermolecular transformations may be induced. From their nature as derivatives of polyvalent alcohols containing several hydroxyls and, according to conditions, ketone, aldehyde or carboxyl groups, it is of course to be expected that great facility for reaction would follow.

Tollens and his pupils[1] have produced a series of condensation-products between polyvalent alcohols and formaldehyde, called *formals*. The reaction occurs readily when equal parts of the alcohol, a 40 per cent. solution of formaldehyde and hydrochloric acid of 1.19 sp. gr. are heated together. The products are crystalline and stable with the probable constitution— as illustrated by trimethylenemannite—

$$\begin{matrix} CH & & CH & & CH \\ \wedge & & \wedge & & \wedge \\ CH_2O, & CHO, & CHO, & CHO, & CHO, & CH_2O. \end{matrix}$$

Sorbite also yields a triformal; adonite a diformal with one free hydroxyl; erythrite and pentaërythrite diformals; glycerin a monoformal with a free hydroxyl, apparently in isomeric forms. Similar reaction follows with gluconic and saccharic acids.

A searching investigation upon the destructive action of more or less dilute mineral acids upon the monosaccharides, throws light upon many well-known reactions.[2] By heating dextrose, levulose, galactose, maltose, and arabinose with acids under different conditions of temperature, pressure, and time, and carefully estimating all of the decomposition-products, it was shown that the monosaccharides undergo three general phases of change which are largely independent of each other:

1. Condensation resulting in the formation of humus-like bodies.

* Written for the Am. Chem. Journ.

[1] Tollens, Henneberg, and Schulz: Ann. Chem. Liebig), 289,20; also Ztschr. Ver. Rübenzuck., Ind., 1896, p. 274.

[2] Berthelot and André; Compt. rend., 123, pp. 567 & 625.

2. Formation of levulinic and formic acids, resulting from a splitting off of a terminal carbon atom, accompanied by deoxidation of the system including the five remaining carbon atoms; a part of this oxygen goes to produce the formic acid or, under changed conditions, carbon dioxide. With the pentose sugars the result is similar. Humus-like bodies are more readily formed where the action occurs under pressure or in closed vessels. The characteristic reaction of the pentoses to yield furfurol occurs readily and, as is well known, almost quantitatively. It is interesting to note that both pentoses and furfurol are endothermic compounds of almost identical degrees of heat-absorption, *viz.*,—86° and—88° calories respectively—which possibly explains the ready transition from one to the other.

3. The slow formation of carbon dioxide results in the case of the pentose as well as in that of the hexoses.

The reaction between monovalent mercaptans and aldoses,[3] and between polyvalent mercaptans and aldehydes,[4] has now been extended to polyvalent mercaptans and aldoses.[5] The condensation occurs on heating the reacting substances in the presence of concentrated hydrochloric acid; the products are crystalline and more stable toward acids and more soluble than those with monomercaptans. Such compounds have been prepared between dextrose, galactose, mannose, xylose, and arabinose and ethylene, trimethelene, and benzoyl mercaptans. The aldose and ketose sugars form characteristic compounds with hydrazine hydrate[6] on digesting small amounts of the substances in methyl alcohol and crystallizing from ether. The constitution is supposed to be as follows:

$$CH_2OH.(CHOH)_4.CH{=}N{-}N{=}CH.(CHOH)_4CH_2OH.$$

Such derivatives have been prepared from dextrose, fructose, and arabinose. Benzhydrazide also combines freely with aldose sugars in the presence of dilute alkalies.

Attempts have been made to utilize the properties of different hydrazines for the separation of sugars. Benzyl- and naphthylhydrazine afford compounds of dextrose and fructose, which by their different solubilities permit such a separation. Methylphenylhydrazine is adapted to the isolation of galactose. Melibiose forms an insoluble compound with allylphenylhydrazine, which may be decomposed by benzaldehyde so as to free the sugar[7]. In a second paper the authors give in detail the results of their comparisons of the properties of methyl-, ethyl-, amyl-, benzyl-, and β-naphthylhydrazines of the various monosaccharides with the exception of fructose, sorbose, and mannose which form no insoluble compounds with the above.

A mixture of galactose and arabinose combine with benzhydrazide, but the arabinose derivative is insoluble and may be separated from the golactose compound. Both may then be decomposed by bezaldehyde, leaving the respective sugars free.[8]

An effort to determine the relation between configuration and lactone-formation seems not to have led to conclusive results.[9] *l*-Gluconic, *l*-gulonic, *l*-mannonic, *l*-arabonic, and *d*-glucoheptonic acids were studied in comparison with their stereoisomers: the gluconic and arabonic acids showed little tendency to lactone-formation but the dibasic acids were particularly active.

The theory of multirotation has received no important contribution as might have been expected to follow the announcement of Lobry de Bruyn and his associates in 1895 regarding the intramolecular transformation and changes in the optical properties of sugars under the influence of alkalies.[10] The priority of the suggestion of this cause of multirotation is claimed by von Lippmann, as recorded in his work *Chemie der Zuckerarten*, p. 130.

It is pointed out that the supposed destruction and loss of sugar in factory-processes through the use of lead oxide or hydroxide is really due to a change in the rotary form of the sugar through the influence of the alkali.[11]

The decomposition of sugars heated with alkalies, and the appearance of brown color in such solutions is proportional to the temperature and concentration of alkali. If air is excluded no brown color results under a temperature of 45° nor is lactic acid produced, but if the solutions are boiled with free access of air the decomposition goes on more rapidly and lactic and formic acids result.[12]

New Synthetic Sugars.

Fischer has added two more to his long list of synthetic sugars by employing his already familiar methods. From xylose was obtained xylonic acid;[13] this by heating with pyridine becomes transformed into the new stereoisomeric lyxonic acid, which by reduction with sodium amalgam yielded lyxose, a new sugar belonging to the dulcite series. The author predicts its preparation by Wohl's "Abbau" method from galactose. In a similar way rhamnose was transformed through the stages of rhamnonic acid and isorhamnonic acid to isorhamnose, a methylpentose stereoisomeric with rhamnose.[14]

Monosaccharides.

Pentoses.—The qualitative reaction of the pentoses and pentosans with phloroglucin has been carefully studied.[15] On warming these substances with concentrated hydrochloric acid and phloroglucin a red color is produced which, with transmitted light, gives characteristic spectrum absorption-bands. The color separates as a sediment which may be filtered out and redissolved in alcohol, rendering the reaction much more sensitive. Other sugars give a colored solution, but no absorption-bands.

The separation of arabinose from galactose by means of the benzhydrazide reaction has already been referred to under "general reactions." Arabinose forms a compound with bromal similar to those with chloral.[16]

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[3] Fischer: Ber. d. chem. Ges., 27, p. 674.
[4] Fasbender: *Ibid*, 20, p. 460.
[5] W. T. Lawrence: *Ibid*, 29, p. 547.
[6] E. Davidis: *Ibid* 29, p. 2308.
[7] W. van Ekenstein and C. A. Lobry de Bruyn: Recueil trav. chim., 15, pp. 97 & 225.
[8] E. Subasschow: Ztschr. Ver. Rübenzuck-Ind., 1886, p. 270.
[9] E. Hjelt: Ber. d chem. Ges., 29, p. 1867.
[10] *Ibid*, 20, p. 3078.
[11] C. Lobry de Bruyn and W. van Ekenstein: Recueil trav. chim., 15, p. 92.
[12] F. Framm: Pflügers Archiv., 64, p. 575.
[13] E. Fischer and O. Bromberg: Ber. d. chem. Ges., 29, p. 581
[14] E. Fischer and H. Herborn: *Ibid*, 29, p. 1961.
[15] B. Tollens: *Ibid*, 29, p. 1202
[16] Hanriot: Compt. Rend., 122, p. 1127.

Rhamnose seems to be to some extent assimilable in the digestive tract, experiments showing that by healthy persons eigth per cent., and by a diabetic patient sixteen per cent. of the amount administered, was excreted unchanged.[17]

By fractional crystallization different modifications of rhamnose (isodulcite) have been noted; *e. g.*, β-isodulcite [$(\alpha_D=10°$ to $12°$] and γ-isodulcite [$(\alpha)_D°=20°$].[18]

With reference to the formation of furfurol from pentoses and pentosans, Tollens has repeated former experiments with glucuronic acid and its derivatives.[19] By distilling the acid with hydrochloric acid of 1.06 sp. gr., from 15 to 17 per cent. of furfurol was obtained, or something less than the theoretical amount. The derivatives of the acid also yielded furfurol in large quantities.

Hexoses.—Dextrose compounds with polyvalent mercaptans, with hydrazine hydrate and alkyl hydrazines, have been referred to under "general reactions." Galactose has been prepared from a kind of gum occurring in wine.[20] Galactosamine[21] loses one-half of its ammonia when boiled with methyl alcohol, and the residue has the same composition as the "osamine" of mannose.[22] A compound between gallactose and choral has been obtained which still retains the power to reduce Fehling's solution, and gives a red color with orcin chloride.[23]

Molecular modifications of galactose with varying rotatory power are reported as resulting from fractional precipitation of the sugar by absolute alcohol in the presence of dilute alkalies; *e. g.*, β-galactose [$(\alpha)_D=81°.6$] and γ-galactose [$(\alpha)]_D=53°$). In watery solutions these forms revert to the normal galactose.[24] A crystalline substance has been extracted from the seed of the yellow lupine, which by hydrolysis yielded galactose, but it does not appear that it was a hexavalent alcohol, although named galactite.[25] Compounds of galactose with chloral and polyvalent mercaptans have been referred to elsewhere.

Mannose has been obtained in crystalline form from a solution in absolute methyl alcohol and ether. It melts at 132°, and exhibits multirotation from $(\alpha)_D=-13°.6$ to $+14.°25$.[26]

The two stereoisomeric methyl-mannosides,[27] on being mixed in molecular proportions, give an optically inactive mixture. On crystallizing at a temperature of 8° or lower, the two isomers crystallized separately, and by allowing the crystallization to proceed *in vacuo*, crystalls of unusual size were obtained, which could be mechanically separated. Crystallization above 15° yielded only the racemic compound. This would indicate that the racemic formation occurs under heat-absorption[28].

The occurrence of sorbose in fermented fruit juices is now accounted for by the isolation of a microbe which exerts an oxidizing influence on sorbite. Inoculation of this microbe into solutions containing sorbite, suffices to produce sorbose.[29]

Volemite, the heptavalent alcohol identified in 1895,[30] while evidently of carbohydrate nature, does not undergo hydrolysis with sulphuric acid, is non-fermentable, and does not react with phenyl hydrazine, although it combines with acetyl chloride, acetic aldehyde and benzaldehyde.[31]

The true position of quercite as a carbohydrate is still doubtful.[32] By oxidation with nitric acid it yields mucic and trihydroxyglutaric acids; with permanganate, malonic acid. The latter indicates the correctness of Kannonikow's formula,

$$CH_2\begin{<}CHOH.CHOH\\CHOH.CHOH\end{>}CHOH.$$

Disaccharides.

Sucrose.—A very thorough study has been made by J. H. Long of the action of salts upon solutions of sucrose. The results of the investigation show that sucrose solutions are completely inverted by a large number of different salts. The action is slow at ordinary temperature, but increases rapidly above 60°; the action is also influenced by light. Apparently the inversion follows the general law governing the action of weak acids on sugars. Although all conditions of concentration, temperature, etc., were carefully controlled, the inversion coefficient was not constant for different salts.[33] Solutions of pure sucrose of 10 and 50 per cent. strength acted upon by sulphurous acid at temperatures from 30° to 80°, showed that inversion resulted in this case as well as with other acids in accordance with the Guldberg-Waage law. The same was found true in the presence of salts and other impurities.[34]

The electrical resistance of a solution of sucrose is a function of its concentration, the minimum being with a solution of a gram-molecule in something more than 10 liters of water. With a constant current the resistance is a function of the temperature, diminishing as $t°$ increases. The current seems to produce only an inappreciable transport of sugar to the positive pole.[35]

A report on the use of Schollmeyer & Huber's electrolythic method for the purification of sugar solutions in factory operations, shows that the result is satisfactory, but that electrolysis alone cannot successfully compete with the lime process of clarification. The success of the present process is due to its combination with the lime process.[36]

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17 L. Lindemann and R. May: Deutsch. Archiv f. klin. Med., 56, p. 283.
18 Tanret: Compt. Rend., 122, p. 86.
19 B. Tollens and F. Mann: Ann. Chem. (Liebig), 290, p. 155.
20 G. Niviere and A. Hubert: Rev. inter. falsific., 9, p. 48.
21 Ber. d. chem. Ges., 28, p. 3082.
22 C. Lobrey de Bruyn and F. van Leent: Recueil. trav. chim., 15, p. 80.
23 Hanriot: Compt. Rend., 122, p. 1127.
24 C. Tanret: Bull. Soc. Chim. (Paris), [3], 15, p. 5.
25 H. Ritthausen: Ber. d. chem. Ges., 29, p. 896.
26 W. van Ekenstein: Recueil. trav. chim., 15, p. 221.
27 Ber. d. chem. Ges., 28, p. 1145, 1167.
28 E. Fischer and L. Beensch: Ber. d. chem. Ges., 29, p. 2927.
29 G. Bertrand: Compt. Rend., 122, p. 900.
30 Ber. d. chem. Ges., 28, p. 1973.
31 E. Bourquelot: J. Pharm. Chim. [2], 26, p. 385.
32 H. Kiliani and J. Schäfer: Ber. d. chem. Ges., 29, p. 1762.
33 J. H. Long: J. Am. Chem. Soc., 18, p. 121, 693.
34 K. Stiepel: Ztschr. Ver. Rübenzuck.-Ind., 1896, p. 654, 746.
35 F. v. Siegroth: Elektro.-Chem. Zeit., 3, p. 33.
36 Baudry: Ibid, July 5, 1896.

Chemistry.

β-Propyl-Piperidine.

This isomer of coniine has been prepared by J. D. Granger according to Gabriel's method by treating β-propyl-chloramylamine $(CH_2Cl)CH_2CH_2CH(C_3H_7)CH_2NH_2$ with potassa. The base is a colorless liquid which boils at 174° under a pressure of 758 mm. Its odor resembles that of coniine, but is not so strong and more like that of mustard oil.

Prof. Ehrlich has examined the base physiologically. He states that it is not as toxic as coniine, the corresponding α-compound, but that 12 ccm. of a 2 p. c. solution in the form of hydrochloride, viz. 0.25 g. $C_8H_{17}N$, will kill a rabbit weighing 1600 g. in three quarters of an hour. [Berichte 30, p. 1060.]

Alcoholic Fermentation without Yeast Cells.

Eduard Buchner has recently strengthened the position taken by his brother Hans (see pp. 94 and 138 of this journal) by additional experiments along the same line. He has brought what he considers a new proof for the existence of the zymase. Beer yeast was carefully freed from external moisture with the aid of the hydraulic press. It was air dried and then at 37°. One half was heated in a flask closed with a wad of cotton to a temperature of 100° for six hours. The yeast cells were thus killed as was proven by test cultures. Yet these dead yeast cells actively fermented a 37 p. c. saccharose solution within from 3—5 hours, the fermentation being caused by the zymase in the dead cells. The other half of the yeast which was heated to 140—145° for an hour no longer caused fermentation, indicating that at this more elevated temperature the zymase is also destroyed. As far as stability toward dry heat is concerned this therefore stands between the living plasm of the yeast and the invertin, which can still be extracted in its active condition after the yeast has been heated to 145° for an hour.

[Berichte, 30, p. 1110.]

Chinese Wax.

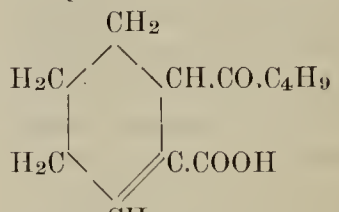
In connection with a detailed investigation of the process of cold saponification, R. Henriques has had occasion to examine two specimens of Chinese or insect wax. This wax is produced by the *Coccus ceriferus* Fabr., native in China and living on the Chinese ash, *Fraxinus chinensis*. Both specimens of wax were obtained directly from China. One specimen was radiating crystalline, could be easily comminuted and melted at about 81½°. The other specimen was more dense and granular crystalline. It could not be as readily comminuted and its melting point ranged up to 83°. Both were white like cetaceum. Besides esters of unsaturated alcohols both contain principally ceryl cerotinate, which was isolated from insect wax and examined by Brodie (Annalen, 67, p. 199). After four crystallizations from petroleum benzin (b. p. 114—135°) the ester is obtained pure.

The author reviews the older formulas assigned to acid, alcohol and ester and basing his conclusions on titrimetric results assigns to the respective substances the following formulas: $C_{26}H_{53}OH$, $C_{25}H_{51}COOH$ and $C_{26}H_{51}O_2 . C_{26}H_{53} = C_{52}H_{104}O_2$.

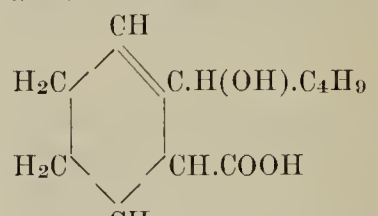
[Berichte, 30, p. 1415.]

Celery Oil.

A report of the examination of this oil by Ciamician and Silber will be found on p. 140 of this journal. These chemists have more recently published a paper on the constitution of the odoriferous constituents of celery oil. To the sedanonic acid they assign the formula

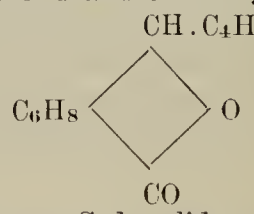


or o-valeryl-Δ¹-tetrahydrobenzoic acid. To sedanolic acid they give the formula

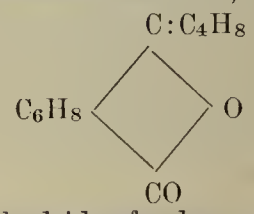


or o-oxyamyl-Δ⁵-tetrahydrobenzoic acid.

The odoriferous constituents are, as formerly stated, sedanolid and the anhydride of sedanonic acid, viz.:

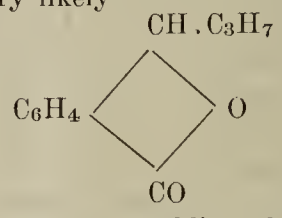


Sedanolid.



Anhydride of sedanonic acid.

Inasmuch as butylphtalide as well as its tetra- and hexa-hydro reduction products possesses a more or less celery-like odor, the authors reduced a derivative of a known phtalide, viz., phtalylisopropylidene. Its reduction product, very likely



also possesses an odor resembling that of celery.

[Berichte, 30, pp. 1419, 1424, 1427.]

Chelidonine.

The results of the late Arthur J. G. Tyrer have been reported by Prof. E. Schmidt. The material operated upon was obtained partly by E. Merck, and partly prepared from fresh chelidonium roots. In both cases the base crystallized from alcohol in transparent plates and melted at 135°. In its behavior to reagents the base corresponded with the accounts given by Henschke and Selle (Archiv f. Pharm. 1888 and 1890) and in composition was found to be the same as those authors state: $C_{20}H_{19}NO_5.H_2O$.

Of the salts, the hydrochloride, hydrobromide and phosphate were prepared and analyzed. From Henschke's account it might be inferred that chelidonine was a tertiary base, but at a temperature of from 130 to 140° a methyl derivative could be obtained.

The mono-acetyl- and mono-benzoyl-chelidonine were prepared, indicating that but one of the five oxygen atoms is present as hydroxy oxygen. With hydroxylamine a crystalline oxime of the formula $C_{20}H_{19}NO_4.NOH$ was obtained.

[Pharm. Journ. 1897 II, p. 21; from Apt. Ztg. 12, p. 442.]

Coloration of Haloid Salts.

Under the influence of the cathode rays haloid salts of alkali metals acquire a more or less intense coloration, which was supposed by some to be the result of allotropic modification, and ascribed by others to a reduction of metal. By heating the crystals to redness in potassium or sodium vapor, Giesel had produced a similar result, and it appears that the color depends on the nature of the salt. Potassium bromide or iodide is colored clear blue, potassium chloride violet, and sodium chloride brown. The colors resist the action of air, but on dissolving the salts in water colorless solutions are obtained, as in the case of the natural blue rock salt. Salts colored in this way, as well as those colored by the cathode rays, lose their color when heated to a sufficiently high temperature.

[Berichte, 1897, p. 156.]

Homologues of Vanillin.

Homologues of vanillin of the general formula

$$C_6H_2\begin{cases}OCnH_{2n+1} & (1)\\ OH & (2)\\ CH_3 & (3)\\ CHO & (5)\end{cases}$$ result,

according to a patent taken out by the chemical factory von Heyden, when chloroform in alkaline solution (Reimer-Tiemann's reaction) is allowed to act upon homopyrocatechuic ethers of the general formula

$$C_6H_3\begin{cases}OCnH_{2n+1} & (1)\\ OH & (2)\\ CH_3 & (4).\end{cases}$$

These homologues possess a persistent odor similar to that of vanillin, but distinct from it. They crystallize from hot alcohol in colorless or yellow scales or needles.

[Pharm. Centrh. 38, p. 441.]

Pumice stone as a Filter Medium.

For the filtration of liquids containing very fine precipitates which are apt to pass through the filter, such as baryum sulphate, lead sulphate, calcium oxalate etc., W. Busch recommends the use of powdered pumice stone. It is necessary to use a very finely powdered pumice stone which has been freed from acid soluble substances by boiling with dilute hydrochloric acid and washing with water. About 2 to 3 grams of this powder are placed in the bottom of a filter. After pouring back once a clear filtrate is obtained.

[Pharm. Centrh. 38, p. 424; from Neuest. Erfind. u. Erf.]

The Distribution of Alkaloids.*

Lobeliaceæ.

Lobeline, —, Lobelia inflata.

Loganiaceæ.

Strychnine, $C_{21}H_{22}N_2O_2$, Strychnos Nux vomica.
Brucine, $C_{23}H_{26}N_2O_4.4H_2O$, " " "
Curarine, $C_{18}H_{35}N$, Strychnos toxifera.
Tubocurarine, $C_{19}H_{21}NO_4$, " "
Curine, $C_{18}H_{19}NO_3$, " "
Akazgine, — Strychnos sp. (Akazga or Boundu or Icaja del Gabon.)
Spigeline, —, Spigelia marylandica.
Gelseminine, $C_{22}H_{26}N_2O_3$, Gelsemium sempervirens.

Meliaceæ.

Azadirine, —, Melia azadirachta.

Menispermaceæ.

Menispermine, $C_{18}H_{24}N_2O_2$ (?), Anamirta Cocculus.
Paramenispermine, —, " "
Berberine, $C_{20}H_{17}NO_4$,, Cocculus palmatus.
Coclaurine, —, Cocculus laurifolius.
Pelosine (=Buxine?), $C_{18}H_{21}NO_3$(?).$1\frac{1}{2}H_2O$, Botryopsis platyphylla St. Hil. Cissampelos Pareira L.

Monimiaceæ.

Atherospermine, $C_{30}H_{40}N_2O_5$ (?), Atherosperum moschatum Labill.
Boldine, —, Peumus boldus (Boldoa chilensis).

Myrtaceæ.

Jambosine, $C_{10}H_{15}NO_3$ (?), Myrtus Jambosa.
Pelletierine (Punicine), $C_8H_{15}NO$, Punica Granatum.
Isopelletierine, $C_8H_{15}NO$, " "
Methylpelletierine, $C_9H_{17}NO$, " "
Pseudopelletierine(Granatonine), $C_9H_{15}NO.2H_2O$, Punica Granatum.

Nymphæaceæ.

Nupharine, $C_{18}H_{24}N_2O_2$ (?), Nuphar luteum (Nymphæa lutea).

Papaveraceæ.

Codamine, $C_{20}H_{25}NO_4$, Papaver somniferum (Opium).
Codeïne, $C_{18}H_{21}NO_3$, " "
Gnoscopine, $C_{22}H_{23}NO_7$, " "
Hydrocotarnine, $C_{12}H_{15}NO_3$, " "
Kryptopine, $C_{21}H_{23}NO_5$, " "
Lanthopine, $C_{23}H_{25}NO_4$, " "
Laudanine, $C_{20}H_{25}NO_4$, " "
Laudanosine, $C_{21}H_{27}NO_4$, " "
Meconidine, $C_{21}H_{23}NO_4$, " "
Morphine, $C_{17}H_{19}NO_3$, " "
Narceïne, $C_{23}H_{29}NO_9$, " "
Narcotine, $C_{22}H_{23}NO_7$, " "
Oxynarcotine, $C_{22}H_{23}NO_8$, " "
Papaverine, $C_{21}H_{21}NO_4$, " "
Papaverosine, —, " "
Protopine, $C_{20}H_{19}NO_5$, " "
Pseudomorphine, $C_{24}H_{38}N_2O_6.3H_2O$, " "
Thebaïne, $C_{19}H_{21}NO_3$, " "
Xanthaline, $C_{37}H_{36}N_2O_9$, " "
Tritopine, $C_{42}H_{54}N_2O_7$, " "
Rhœadine, $C_{21}H_{21}NO_6$, Papaver Rhœas.
Chelidonine, $C_{20}H_{19}NO_5.H_2O$, Chelidonium majus.
α-Homochelidonine, $C_{21}H_{21}NO_5$, " "
β- " $C_{21}H_{21}NO_5$, " "
Chelerythrine, $C_{21}H_{17}NO_4$, " "
Protopine, $C_{20}H_{17}NO_5$, " "
Sanguinarine, $C_{20}H_{15}NO_4$, Sanguinaria canadensis.
β-Homochelidonine, $C_{21}H_{21}NO_5$, " "
γ- " $C_{21}H_{21}NO_5$, " "
Glaucine, —, Glaucium luteum Scop.
Glaucopicrine, —, " " "
Fumarine, $C_{21}H_{19}NO_4$, Glaucium corniculatum.

Passifloriaceæ.

Carpaïne, $C_{14}H_{25}NO_2$, Carica Papaya.

Piperaceæ.

Piperine, $C_{17}H_{19}NO_3$, Piper nigrum.
Piperovatine, $C_{16}H_{21}NO_2$, Piper ovatum.

Polygalaceæ.

Ratanhine, $C_{10}H_{13}NO_3$ (?), Krameria triandra.

* Continued from p. 140.

Ranunculaceæ.

Aconitine, $C_{33}H_{45}NO_{12}$, Aconitum Napellus.
Aconine, $C_{26}H_{43}NO_{11}$, " "
Pseudaconitine (= Napelline), $C_{36}H_{49}NO_{12}.H_2O$, Aconitum Napellus and A. ferox.
Picraconitine, $C_{31}H_{45}NO_{10}$, Aconitum Napellus.
Japaconitine, $C_{66}H_{38}N_2O_{21}$ (?), Aconitum japonicum.
Lycaconitine, $C_{27}H_{34}N_2O_6.2H_2O$ (?), Aconitum lycoctonum.
Myoctonine, $C_{27}H_{34}N_2O_6.5H_2O$ (?), Aconitum lycoctonum.
Delphinine, $C_{22}H_{35}NO_6$ (?), Delphinium Staphysagira.
Delphinoidine, $C_{42}H_{68}N_2O_7$ (?), " "
Delphisine, $C_{27}H_{46}N_2O_4$ (?), " "
Staphysagrine, $C_{22}H_{33}NO_5$ (?), " "
Calcatrippine, —, Delphinium consolida.
Hydrastine, $C_{21}H_{21}NO_6$, Hydrastis Canadensis.
Berberine, $C_{20}H_{17}NO_4$, " "
Canadine, $C_{21}H_{21}NO_4$, " "
Damascenine, $C_{10}H_{15}NO_3$, Nigella damascena.
—, —, Cimicifuga racemosa.
Isopyrine, —, Isopyrum thalictroides.
Pseudoisopyrine, —, " "

Rosaceæ.

Pyrarine, —, Pyrus s. Sorbus Aria.

Rubiaceæ.

Aricine, $C_{23}H_{26}N_2O_4$, Cinchona species.
Quinamine, $C_{19}H_{24}N_2O_2$, " "
Conquinamine, $C_{19}H_{24}N_2O_2$, " "
Quinine, $C_{20}H_{24}N_2O_2$, " "
Quinidine, $C_{20}H_{24}N_2O_2$, " "
Quinicine, $C_{20}H_{24}N_2O_2$, " "
Cincholine, —, " "
Cinchonine, $C_{19}H_{22}N_2O$, " "
Cinchonidine, $C_{19}H_{22}N_2O$, " "
Cinchotine, $C_{19}H_{22}N_2O$, " "
Cuscamine, —, " "
Cuscamidine, —, " "
Cusconine, $C_{23}H_{26}N_2O_4.2H_2O$, " "
Cusconidine, —, " "
Dicinchonine, $C_{38}H_{44}N_4O_2$, Cicosulenta(?) and Cinchona succiruba.
Diconquinine, $C_{40}H_{46}N_4O_3$, Cinchona succirubra.
Homocinchonidine, $C_{19}H_{22}N_2O$, Cinchona species.
Hydroquinine, $C_{20}H_{26}N_2O_2$, " "
Hydroquinidine, $C_{20}H_{26}N_2O_2$, " "
Hydrocinchonine, $C_{19}H_{24}N_2O$, " "
Hydrocinchonidine, $C_{19}H_{24}N_2O$, " "
Javanine, —, Cinch. Calisaya, var. javanica.
Paricine, $C_{16}H_{18}N_2O.2H_2O$, Cinch. succirubra (Darjeeling).
Aribine, $C_{23}H_{20}N_4.8H_2O$, Araribra rubra.
Chairamine, $C_{22}H_{26}N_2O_4$, Remijia Purdieana.
Conchairamine, $C_{22}H_{26}N_2O_4$, " "
Chairamidine, $C_{22}H_{26}N_2O_4$, " "
Conchairamidine, $C_{22}H_{26}N_2O_4$, " "
Concusconine, $C_{23}H_{26}N_2O_4$, " "
Cinchonamine, $C_{19}H_{24}N_2O$, " "
Cinchonine, $C_{19}H_{22}N_2O$, " "
Quinine, $C_{20}H_{24}N_2O_2$, Remijia pedunculata.
Cupreïne, $C_{19}H_{22}(OH)_2N_2$, " "
Coffeïne, $C_8H_{10}N_4O_2$, Coffea arabica.
Coffearine, —, " "
Crossopterine, —, Crossopteryx Kotschyana Fenzl.
Emetine, $C_{30}H_{40}N_2O_5$, Cephaëlis Ipecacuanha.
Cephaëline, —, " "
Erodine, $C_{12}H_{13}NO_{12}$ (?), Esenbeckia febrifuga Martius.
Esenbeckine, —, Exostemma floribundum.
Hymenodyctine, $C_{23}H_{40}N_2$, Hymenodyction excelsum Wall. (Cinchona excels. Roxb.)
Moradeïne, —, Cinchon. Morado Ruiz (=Cinch. purpurea R. & Pav.)
Palicourine, —, Palicouria Markgrafii.

Botany and Pharmacognosy.

Damiana Oil from Leaves.

Damiana leaves, originating from Mexico and said to be collected from various Turnera species (*Turnera diffusa* Ward, and *Turnera aphrodisiaca* Ward) were first distilled by us in 1888 (see Report, April 1888). A consignment of leaves distilled last year yielded 1 per cent of oil; this had the following properties:— sp. gr. 0.943, while the specific gravity of oils formerly distilled was much higher, amounting to 0.970 and 0.986; opt. rot.—23°25′; the oil contained saponifiable constituents, and we ascertained its saponification factor to be 41.8. When standing in a cool place, crystalline separations occurred on the surface similar to those initiating the solidification of oil of roses. It may, therefore, justly be deduced that damiana oil also contains paraffin. The oil has not yet found any practical application. The oil prepared by us has mainly served to complete scientific collections.

[Ber. Schimmel & Co., April '96.]

Lemon Oil.

Of considerable importance, particularly in legal controversies, is the question whether lemon oil contains or does not contain pinene. In order to get at the truth, we distilled 50 kilos of lemon oil employing a vacuum cooler. The first distillates—about 1 kilo—were subjected to repeated fractional distillations, aiming at the fraction passing over at the lowest temperature; this boiled at the temperature of 172°. Below this temperature, 8 cc., equal to 0.016 percent passed over, and this was wanting in all of the properties of pinene. Pure lemon oil, therefore, does not contain pinene; if so, it is adulterated with turpentine oil.

At former investigations, at a time when a discrimination between pure and sophisticated oil could not be ascertained, pinene had been found in lemon oil and was considered a constituent of the same. In conformity with the present state of knowledge, there can be no doubt that the oils then examined contained turpentine oil.

From recent investigations we obtained the evidence that the sophistication with turpentine oil is again much in vogue; we have met with commercial oils containing as much as 60 percent of turpentine oil.

[Ber. Schimmel & Co., April '96.]

Mandarin Oil.

On the basis of an investigation by de Luca (Comptes rendus 45, 904) published in 1857, the opinion has prevailed ever since that mandarin oil consists of one definite terpene, boiling at 178° and forming with muriatic acid a solid dichlorhydrate. When we established the presence of citral in this oil in 1891 (Report, April 1891, p. 67) and consequently proved that it con-

tained oxygen, no solid derivative of this aldehyde had been obtained, since Doebner's reaction was discovered later on. We recently endeavored, with the aid of the componnd formed at this reaction to verify onr former statement; when boiling the respective fraction with β-naphtylamine and pyroracemic acid, the well-known yellow deposit was obtained; but upon repeated recrystallization, we did not succeed in obtaining a body of the constant melting point of citryl-β-naphtocinchonic acid. The prodnct obtained commenced to melt at 197°, but did not become liquid before reaching the temperature of 222°. It is, therefore, probable that mandarin oil contains, like lemon oil, both aldehydes, citral and citronellal.

The properties of the hydrocarbon indicated the presence of limonene. After several fractionations, ⅝ of the oil finally reached the boiling point between 175° and 179°, showing an optical rotation of +77°. Part of this fraction was employed for obtaining the dichlorhydrate prepared already by de Luca, which was found to melt at 49°. Another portion was treated with bromine, yielding limonene tetrabromide melting at 104° to 105°. These reactions bear evidence that mandarin oil contains dextro-limonene.

[Ber. Schimmel & Co., April '96.]

Adulteration of Strophanthus Seeds.

It is reported that *Strophanthus* seeds are adulterated intentionally with the seeds of the Apocynaceous *Kickxia Africana*, a caoutchouc-producing plant of Africa. Dr. P. Siedler has studied comparatively the seeds of *Strophanthus hispidus* DC., *S. Kombé* Oliver and the seeds of *Kickxia*. The seeds of *Kickxia* are spindle-shaped, not flattened, and have base and apex tapered off in a similar manner. They are not hairy. The *Strophanthus* seeds, on the other hand, show at least their remains of hairs, are pronouncedly flattened in form, and have a rounded base and sharp apex. In cross section, the *Kickxia* seeds are characterized by much-folded cotyledons, while those of *Strophanthus* lie parallel npon one another. When treated with concentrated sulphuric acid, sections of *Kickxia* seed turn first brown, then cherry-red; the *Strophanthus* seed assumes a green color.

[Zeitschr. d. allg. oesterr. Apotheker-Vereins, 35, p. 398.]

The Water Hyacinth Pest.

The water hyacinth, *Piaropus crassipes* (Mart.) Britton, is a floating water plant bearing leaves which form a rosette from 1 to 2 feet high. The basal parts of the young plant are strongly swollen, these inflations acting as air reservoirs to buoy up the plant. The roots form a dense, bushy mass hanging down 2 feet or more. The plant is confined mostly to sluggish fresh water streams, ponds and the like.

It was first introduced into Florida from northern South America a considerable time since. Being by accident introduced in 1890 into the St. Johns River, its large masses of beautifnl flowers gained for it favor, and a wider distribution was given it through the efforts of inhabitants of various river towns. In the last few years, however, the development of this plant in the rivers of Florida has been so rapid as to offer serious harm to several industries. The annual damage wrought by the floating masses to lumbering is estimated at $55,000. The fishing industry is greatly interfered with and bridges are threatened, while the decay of large masses threatens the health of communities. How to get rid of the pest is a problem now puzzling the government botanists.

[Bulletin 18, Div. of Botany, 1897.]

Bark of Prunus Virginiana.

Grace E. Cooley has studied the bark of *Prunus Virginiana* in view of ascertaining how far the official bark collected in the autnmn may be distinguished from that collected at other seasons of the year. No distinctive histological distinction was found. It was observed, however, that a study of the starch grains in the bark gave much information. All barks collected in summer and winter are found to contain no starch or but very little. The maximum starch content is found in October and early November, just after the fall of the leaves. This gradnally disappears, by the last of November the bark being nearly free from it, remaining so thronghout the winter. Starch formation begins again in the spring, reaching its maximum about the end of April when the leaves are bursting the bud scales. Bark should, therefore, if collected in the fall, contain much starch. To distinguish fall bark from that collected in the spring, a test for tannin is applied. The amount of tannin in the spring bark is noticeably greater than in fall bark.

[Journ. of Pharmacol. 4, p. 168.]

Structure of Eucalyptus Leaves.

Dr. Albert Schneider has made an anatomical study of two types of Eucalyptus leaves. The earlier form is comparatively thin, rather large, ovate and cordate at the base. In cross section, palisade cells are fonnd only on the upper side, stomata are found on under side only, about 40 to the sq. mm. The later type, the isolated leaf, is sickle-shaped, pointed, not cordate at the base. It takes a vertical position with the convex edge directed upward. Thickness of the earlier form, 167 to 208 μ, the later form, 334 to 501 μ. The epidermis of the isolated leaf is alike on both sides. It contains numerous stomata, 30 to 35 to the sq. mm., visible as whitish dots scattered over the surface of the leaf when examined with a lens. In cross section, the guard cells appear more sunken than in the dorsiventral type. The thickness of the outer wall of the epidermis, inclusive of cuticle and wax, is from 15 μ to 20 μ in the later form, in the earlier form 4 μ to 5.5 μ. The sickle-shaped leaf has a palisade tissue on each side, the spongy tissue being found only between these in the middle of the leaf.

[Journ. of Pharmacol. 4, p. 169.]

Official Jaborandis and their Adulterants.

Dr. Albert Schneider has given a detailed study to the various jaborandi leaves appearing in the market. Of the 26 species that may thus occur, but seven are given special attention. These are as follows: *Pilocarpus Jaborandi* Holmes, the Pernambuco jaborandi; *Pilocarpus Selloanus* Eng., Rio jaborandi; *Pilocarpus pennatifolius* Lem., Paraguay jaborandi; *Pilocarpus spicatus* St. Hil., Aracati jaborandi; *Pilocarpus trachyl-*

ophus (no author cited), Ceara jaborandi; *Pilocarpus microphyllus* Stapf., Maranham jaborandi: and *Swartzia decipiens* Holmes, false Maranham jaborandi.

All the leaflets studied have a single upper palisade layer, spongy parenchyma tissue and stomata in the lower epidermis only. The leaflets are entire, quite thick and firm and are similar in form though variable in size. All jaborandis studied have aggregate crystals in the leaf blades, the size and number varying with the species. No prismatic crystals were found. The oil glands occur with most frequency near the upper surface of the leaf; they are also numerous near the lower epidermis, rarely occurring wholly within the spongy tissue. They all belong to the lysigenetic class of glands, certain cells being broken down to furnish the contents of the glands. The hair-cells are in all cases simple, conical and more or less recurved.

Pilocarpus Jaborandi. Leaflets comparatively large, 8 to 12 cm. long, 2.5 to 4 cm. wide, average thickness 0.330 to 0.375 mm. Both upper and lower sides quite smooth with very few short hair-cells. Color when thoroughly dry quite brown, particularly on lower surface, odor faintly aromatic, taste slightly bitter and pungent. This species is recognized by the large size of the epidermal cells. Tangential diameter of cells of upper epidermis 45 to 55 μ, vertical diameter, 18 to 22 μ; lower epidermis, tangential diameter 48 to 60 μ. Epidermal cells without contents.

Pilocarpus Selloanus. Leaflets closely resemble preceding, somewhat broader and thinner, 3 to 5 cm. wide, 0.270 to 0.285 mm. thick; glands more readily visible, color less markedly brown than in foregoing species; taste decidedly more pungent, otherwise similar. Distinguished from *P. Jaborandi* by smaller epidermal cells and from succeeding species by absence of sphaerocrystals and other epidermal contents, by the absence of long, curved hairs and resin cells. Tangential diameter of cells of upper epidermis 27 to 32 μ, vertical diameter 12 to 15 μ.

Pilocarpus pennatifolius. Leaflets quite variable in size, 8 to 14 cm. in length, 2.5 to 5.5 cm. wide, thickness 0.180 to 0.210 mm. Glands quite numerous, but faintly visible to the naked eye, color as in *P. Selloanus*, odor much as in *P. jaborandi.* Distinguished by markedly reddish-brown, resinous substances found in various tissue elements; colored guard cells of stomata diagnostic.

Pilocarpus spicatus. Leaflets 5 to 6 cm. long, 2.5 to 3 cm. wide, average thickness 0.165 mm. When thoroughly dried, brown with a reddish tinge, scarcely any perceptible odor, taste pungent and only slightly bitter, glands numerous and comparatively small. Distinguished by epidermal cells (especially lower epidermis) fitted with sphaerocrystals and resinous substances. Sphaerocrystals not readily seen since enclosed by the resinous substance. Resinous substance (of spongy tissue in particular) reddish-brown as in *P. pennatifolius.*

Pilocarpus trachylophus. Leaflets 4 to 6 cm. long, 2 to 3 cm. wide, 0.300 to 0.345 mm. thick. Lower surface markedly pubescent, upper surface slightly so; color above olive-green, paler below. Odor faintly aromatic, taste slightly pungent, somewhat bitter. Distinguished by long palisade cells (95 μ) and numerous long, sickle-shaped hairs on the lower surface; similar hairs also occur on the upper surface, fewer in number and usually shorter.

Pilocarpus microphyllus. Leaflets small, 2.5 to 3 cm. long, 1.25 to 1.75 cm. wide, thickness 0.240 to 0.280 mm. Color bright olive-green, practically odorless and tasteless. Distinguished by yellowish granular contents of guard cells and auxilliary cell of stomata, also by dark olive, smoky color of contents of resin cells.

Swartzia decipiens. This is a member of the *Leguminosæ* and has none of the properties of true jaborandi. Leaflets resemble *P. microphyllus*, small, 2.5 to 3.5 cm. long, 1.5 to 2.25 cm. wide, 0.160 mm. thick, not pubescent; color dull green, oil glands, aromatic odor and pungent taste wanting. This particular false Maranham jaborandi is recognized by the wavy outlines of the vertical walls of the epidermal cells.

In order to insure success in identifying these leaves in powders, the material must be finely comminuted, Nos. 80 to 100 being best. Glycerine and water in equal parts or glycerine, water and alcohol are good mounting media and serve likewise to clear the mounts as well. Care should be taken to exclude air bubbles. Fifteen to twenty percent mixtures may be detected.

To facilitate the classification of specimens under study, the abstractor has arranged the following key based on the diagnostic points of Dr. Schneider's descriptions.

Leaflets without punctate dots, internal oil glands, *Swartzia decipiens.*
Leaflets with punctate dots, internal oil glands,
  Leaflets 8 to 14 cm. long, 2.5 to 5.5 cm. wide,
    Epidermal cells without contents,
      Tangential diameter of upper epidermal cells, 45 to 55 μ, *Pilocarpus Jaborandi.*
      Tangential diameter of upper epidermal cells, 27 to 32 μ, *Pilocarpus Selloanus.*
    Epidermal cells containing sphaerocrystals, sometimes also reddish-brown resin, tangential diameter, 16 to 25 μ, *Pilocarpus pennatifolius.*
  Leaflets 4 to 6 cm. long, 2 to 3 cm. wide,
    Palisade cells short, 45 μ long, 15 μ wide, *Pilocarpus spicatus.*
    Palisade cells long, 95 μ long, 9 to 11 μ wide, *Pilocarpus trachylophus.*
  Leaflets 2,5 to 3 cm. long, 1.25 to 3 cm. wide, *Pilocarpus microphyllus.*

[Journ. of Pharmocology, 4, p. 141.]

Medicinal Plants of the Klamath Indians.

In a recent paper, Frederick V. Coville, government botanist, gives his observations on the plants used by the Klamath Indians, a tribe living in the southeastern part of the state of Oregon.

A glance at the list of plants used medicinally, reveals some interesting facts. Among the plants mentioned as having distinct uses as remedies, we find five emetics of various degrees of efficiency, two vesicants, one strong poison, one sudorific, one probable astringent, two protectives, one emollient, one pectoral, and one vulnerary. This list is interesting not merely because of what it contains, but perhaps fully as much so because of what does not appear.

The plants and their uses as noticed by Coville follow.

Libocedrus decurrens Torr. The branches and twigs of this Conifer are often used in administering a sweat-bath to a sick person.

Pinus murrayana Balf. The pitch of this tree is sometimes used as a remedy for sore eyes, a very small fragment being placed inside the lid.

Triglochin maritima L. furnishes seed-like carpels which are parched and eaten and sometimes roasted and used as a substitute for coffee.

Zygadenus venenosus Wats. A plant popularly, and doubtless correctly, supposed to poison cattle; well known locally under the name "poison camas", "white camas" and "lobelia" and common in the natural meadows. The roots when eaten cause extreme vomiting.

Iris missouriensis Nutt. The dried root stalks are sometimes used by medicine men as a smoking material, mixed with *Zygadenus venenosus* and a little tobacco, to give a person a severe nausea, in order to secure a heavy fee for making him well again.

Eriogonum stellatum Benth. A low shrub, the small, rounded, cottony leaves of which, about 2 ctm. in diameter, are placed on burns to soothe the pain by protecting the surface from the air.

Kunzia tridentata (Prush) Spreng. A shrub commonly 1 to 1.5 meters in height characteristic of the yellow pine forest. The roots after steeping in water are drunk as a remedy for coughs and other lung and bronchial troubles. The Indians regard this as their best medicine for this class of complaints. The dry, ripe fruits, which are intensely bitter, mashed in cold water and drunk are sometimes used as an emetic.

Rhamnus purshiana DC. In this part of Oregon the bark of this shrub, Cascara sagrada, is apparently not gathered for the market. The foliage, twigs and bark are made into a tea by the Indians and used as an emetic. The berries also act as an emetic.

Cicuta maculata L. One of the *Umbelliferæ* characteristic in swamps and along streams containing a deadly poison. The roots mashed and mixed with poison from a rattlesnake's poison sacs or with the decomposed liver of a deer or some other animal, which has been buried in the ground a few days, were used to poison war arrows, the heads of the arrows being dipped in the moist mixture and dried over a special kind of fire with a certain ceremonial. Cicuta was sometimes used among Indians to poison people in very much the same way as arsenic and other well-known poisons are used in civilized communities. It is also stated that pieces of dead fish dried in a certain manner are a deadly poison when taken in food. *Cicuta* roots are said to kill horses and cattle. In tramping in marshes where the plants abound, the animals crush the roots, and the poisoned water in the hoof holes is afterwards drunk or the exposed roots eaten.

Heracleum lanatum Michx. The young shoots when about 15 ctm. high are used for food and the roots are employed medicinally. [In what manner, is not stated.]

Apocynum cannabinum L. This plant seems not to be in use either for its fibre or as a medicine.

Mentha canadensis L. The native, true mint, frequent in the borders of marshes. A tea is made from its herbage.

Sambucus glauca Nutt. The common elder of this region. The berries are used as food. One curious use of the plant, now rarely resorted to, but formerly common among the Snake Indians, consists in punching out the pith from sections of the stem, ramming them full of large crickets, *Anabrus simplex* Hald., and plugging the ends. The contents of the stems were used for food in the winter.

Artemisia tridentata Nutt. The largest, most abundant and most widely distributed species of sage bush, composing probably nine-tenths of the shrubby plains vegetation of southeastern Oregon. In medicine, a decoction of the herbage is used internally to check diarrhœa, externally as an eyewash, while the mashed vegetation is used as a substitute for liniment.

Wyethia mollis May. Abundant in the yellow pine forests. The roots of a plant, which from the description is probably this, are mashed and used as a poultice for swellings.

Chondrophora nauseosa (Prush) Britton. A shrub of the plains about 4 feet high, silvery-white, with narrowly linear leaves, bearing yellow composite flowers in September. Its mashed herbage, aromatic and resinous, is used to raise blisters.

Chrysothamnus bloomeri (Gray) Greene. A yellow-flowered composite shrub, 1 to 3 feet high with slender, bright green foliage. A poultice of the mashed leaves and flowers is used to draw blisters. Related shrubs containing aromatic resinous principles are used in a similar manner.

[Contrib. from U. S. Nat. Herb., Vol. V, No. 2, 1897.]

Proteids of Seeds.

T. B. Osborne and G. F. Campbell find that both yellow and blue lupin seeds contain very little proteid matter soluble in water. The total quantity obtained from the yellow lupin amounted to 0.37 per cent. only, and of that part consisted of proteose. Peptone is not contained in the freshly-ground seed, but is formed in small quantity after prolonged contact with water. The proteid matter soluble in saline solutions was found to be conglutin, the yellow lupin yielding 26.2 per cent. Sunflower seeds yield a large quantity of a globulin, probably edestin, but as obtained by extraction from the seed it is mixed with helianthotannic acid. The chief proteid of the cow-pea (*Vigna catjang*) is also a globulin, essentially different in composition and properties from the legumin of the pea and vetch. The name proposed for it is "vignin." Besides this the cow-pea contains two other globulins, one resembling phaseolin. The white-podded adzuki bean (*Phaseolus radiatus*) contains phaseolin and a distinct globulin, which is being further investigated.

[Journ. Am. Chem. Soc., XIX., 454, et seq.]

Collecting Papaw Juice.

F. B. Kilmer recommends that an incision, not more than ½ inch deep, be made lengthways in the green and full fruit, and the juice collected in tin pans made so as to surround the trunk of the tree. The collection should take place early in the morning, as the sun quickly dries the juice and so stops the flow. The yield is much larger just after a rain storm or a spell of wet weather. The juice must be tried in the sun the day it is collected, after spreading out thin in the tin pans or on sheets of glass.

[Bull. Bot. Dept., Jamaica, IV., 68.]

New Remedies.

Dextroform.

This is a combination of formaldehyde with dextrine. It was first prepared by Prof. A. Claasen and employed as an antiseptic agent by Dr. Bongartz (Muench. Med. Wochenschrift, 1897, No. 22). This new remedy is freely soluble in water and glycerine, and was found to be especially useful in gonorrhœa. In general, it strongly resembles amyloform in its therapeutic properties. [Ph. Ztg., 1897, p. 404].

Kreosolid.

Under this name Dr. Denzel, of Tubingen, has introduced a magnesium compound of the divalent phenols of creosote: it is a white powder with slight smell and taste, has no caustic action, and can therefore be taken without discomfort. In the stomach guaiacol and creosol are liberated in a minute state of division by the acid there present. The dose is seven grains four times a day.

Therapeut. Monatsh., 1887, p. 292.]

Ossalin.

Ossalin (Adeps ossium) is a fat prepared from fresh beef-bone marrow by J. E. Stroschein of Berlin, and recommended by him as an ointment base. The main advantage of this fat, according to the author, is that it is capable of taking up as high as 200 p. c. of water, which property would lead one to suppose that any ointment prepared from ossalin should be quickly absorbed by the skin. Ossalin is a very mild fat, perfectly neutral, and not producing the least irritation of the skin. It has a grayish-white color and a tallow-like odor. [Ph. Ztg., 1897, p. 354].

Ossin.

This new remedy (called also Extractum ossium liquidum) is like the above placed on the market by J. E. Stroschein of Berlin. According to the manufacturer 100 parts of the preparation contain: water, 8.82 p.; salts, 9.40 p.; ethereal extract, 0.06 p.; nitrogen, 12.10 p.; substances soluble in alcohol of 80°, 61.25 p. The salts consist of phosphoric acid, 32.79 p. c.; sulphuric acid, 1.85 p. c.; chlorine, 9.54 p. c.; ferric oxide, 0.34 p. c.; sodium oxide, 12.12 p. c.; potassium oxide, 38.47 p.; lime and magnesia, 4.77 p. c.; silica, 0.03 p. c. The preparation appears on the market as a dark brown fluid of slightly bitter taste; it is intended to be used in the cure of diabetes.

[Ph. Ztg., 1897, p. 354.]

Alcarnose.

Alcarnose is a new food, prepared by J. D. Riedel of Berlin according to the formula of Dr. Hiller of Breslau; it is said to contain, in a predigested condition, all the nutritive elements necessary for the nutrition and strengthening of the body. According to the manufacturers, the preparation is so readily soluble that it can be directly absorbed and assimilated by the mucous membranes of the stomach and intestinal canal, and is therefore capable of affording nutrition to the system even in case of complete lack of digestive activity. Alcarnose forms a brown tough mass, of pleasant odor and taste. It can be borne even by a very delicate stomach, and can be taken for weeks without any ill effects. It comes on the market in capsules of 12 g. capacity; to prepare a bowl of soup, 2—3 of these are dissolved in hot water, bouillon, or milk. The percentage composition of alcarnose, according to Dr. Hiller, is as follows: Digested albumen (from meat and vegetables), 23.8 p.; extractive matter and salts from meat, 2.3 p.; digested carbohydrates (maltose and dextrine), 67.1 p.; salts (sodium chloride; alkaline phosphates, carbonates, sulphates, and organic salts; alkaline earths, traces of iron), 6.8 p.

[Ph. Ztg., 1897, p. 354.]

Dialysates.

Golaz, apothecary in Vevey, has introduced under this name a kind of dialyzed fluid extracts which contain in each part by weight the active constituents of an equal part by weight of the fresh plant.

The fresh plants are harvested during good weather, sorted and immediately reduced to a pulp and transferred to the dialyzer. It is first extracted with water, then with alcohol, a very weak spirit being used at first and the concentration gradually increased. The dialysis lasts about two weeks. The dialyzed product is then assayed. Dr. Kunz-Krause has shown that these dialyzed extracts really contain the active alkaloids or glucosides and Dr. Jacquet reports favorably on their stability.

[Pharm. Centrh. 38, p. 423; from Corresp.-Bl. f. Schw. Aerzte 1897, p. 326.]

Oxysepsine.

Under this name Prof. Hirschfelder (D. med. Wochenschr., 1897, 19) has brought out a substance resembling oxytuberculine (see above), concerning which he says:

"In advanced cases of tuberculosis with cavities, we have to deal with a complex infection of several micrococci and bacilli which produce the destruction of the tissues as well as the hectic fever. In such cases I have employed, besides oxytuberculine, an oxytoxine which is prepared in a similar manner from bacteria isolated from the sputum of a tuberculous person, suffering from a high hectic fever. Enormous quantities of both substances were injected, without causing any inconvenience. The equivalent of 2.5 g. of tuberculine, and as much as 60 ccs. of oxysepsin were often injected without producing any rise in temperature or the slightest other untoward effects."

[Ph. Ztg., 1897, p. 326.]

Oxytuberculine.

This is the name given by Prof. J. O. Hirschfelder (D. med. Wochenschr., 1897. 19) to a tuberculine modified by oxydation, which after numerous experiments he believes capable of curing local as well as general tuberculosis. For the preparation of this remedy he does not employ Koch's tuberculine, but one prepared by himself from a very virulent bacillus. According to the author, this bacillus by growth in the proper medium has become so virulent, that nine days after inoculation into guinea-pigs, general tuberculosis with numerous bacilli resulted. The culture-medium consists of calfs-bouillon with 4 p. c. glycerine, 1 p. c. Witte's peptone, 0.5 p. c. sodium chloride and 0.3 p. c. sodium carbonate. After the completed growth of the

bacilli, this is sterilized and filtered. The filtrate is mixed with ⅛ its volume of 10 p. c. (by volume) hydrogen peroxide solution, the vessel closed with cotton and heated in a sterilizer. Every twelve hours a like quantity of hydrogen peroxide is added, and this continued for 16 hours. The excess of hydrogen peroxide is removed by rendering the solution alkaline. The advantage of this lymph over other tuberculine preparations is said to lie in the fact that comparatively large doses (20 ccs. daily) can be given without any bad after effects. Hirschfelder was led to this work by the consideration that the changes by which toxines are transformed into antitoxines in the organism are those of oxydation.

[Pharm. Ztg., 1897, p. 326.]

Triphenyl Albumin.

Prepared by heating dry powdered egg albumin with ten times its weight of phenol on a water bath and precipitation with alcohol. The flocculent precipitate is then washed with alcohol and water: it is free from taste or smell, insoluble in hot water, alcohol or potash solution, but readily soluble in phenol. According to Shimada it is albumin in which three hydrogen atoms—in Leberkuhn's formula—are replaced by phenyl groups, $C_{72}H_{109}(C_6H_5)_3N_{18}SO_{22}$. Triphenyl albumin is described as being a good material for the culture of bacteria, and it is susceptible of fermentation like ordinary albumin.

[Pharm. Journ., 59, p. 4; from Chem. Centralb., 1897, p. 18.]

Ichthalbin.

This new remedy, a combination of ichthyol with albumen, analogous to tannalbin, was first recommended by Dr. A. Sack (D. Med. Wschr., 1897, No. 23) as a substitute for ichthyol in internal medication. It is said to produce the same results as ichthyol without showing any of the bad secondary effects (heartburn, nausea, etc.) of the latter.

Solutions of ichthyol with albumen solutions produce precipitates which still retain distinctly the odor and taste of pure ichthyol, but loose these upon heating for several hours, or by washing for some time with alcohol or with much water. There is thus obtained a very fine, grayish-brown powder, which is not only odorless but also almost tasteless. Experiments have shown that the preparation is insoluble in acid solutions (pepsin-hydrochloric acid), but is dissolved completely in alkaline solutions, from which it is precipitated as a voluminous precipitate upon acidulation. Ichthalbin is administered as a dry powder, 4 g. per os, this quantity corresponding to 3 g. of commercial ichthyol. The new remedy is put on the market by Knoll & Co., of Ludwigshafen a. Rh.

[Ph. Ztg., 1897, p. 404].

Iodized Fats.

These are iodine addition products of several fats, for whose preparation E. Merck has applied for a patent. According to Dr. Winternitz, who first prepared these compounds of constant composition, they may be employed therapeutically in place of potassium iodide and other iodine preparations. He found that upon feeding animals with iodized fats (together with other food) he could easily demonstrate the presence of iodine in almost all parts of the body. Not only did the abdominal fat contain it, but also the ethereal extracts of almost all organs, and especially the muscles and bones, contained large quantities of iodine. Muscles freed as thoroughly as possible from fat, still contained appreciable quantities of iodine. To be sure, the iodized fat after it becomes part of the organism does not retain its original composition, since it looses iodine during the process of absorption.

These new preparations which are said to differ in no respect from the original fats as regards odor and taste, are recommended by Winternitz for internal and external use in place of Ol. Jecoris iod., Ol. Iodi, Ungt. Iodi, and other unpalatable iodine preparations. Experiments with similar bromine preparations are now in progress. [Ph. Ztg., 1897, p. 404.]

Literary.

Books and Pamphlets Received.

Verlag von Chr. Herm. Tauchnitz—Leipzig. Anatomischer Atlas der Pharmacognosie und Nahrungsmittelkunde von Dr. A. Tschirch, Professor der Pharmacognosie und Director des pharmazeut. Instituts der Universität Bern, und Dr. O. Oesterle, Assistent am pharm. Inst. d. Univ. Bern. Lieferung 12. 1897.

Verlag von Julius Springer—Berlin. Die neuen Arzneidrogen aus dem Pflanzenreiche von Dr. Carl Hartwich, Professor der Pharmacognosie am Eidgenössischen Polytechnicum in Zürich. Ein Band., pp. 469. 1897.

—— Vierteljahresschrift über die Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel, der Gebrauchsgegenstände sowie der hierher gehörenden Industriezweige. Mit der Redaction beauftragt: Dr. A. Hilger. Zwölfter Jahrgang. Das Jahr 1897. Erstes Heft, pp. 1—152.

Verlag: Art. Institut Orell Fuessli—Zürich. Manuale der neuen Arzneimittel für Apotheker, Aerzte und Drogisten, enthaltend über 2000 neue und neueste Arzneimittel, zusammengestellt von J. Mindes, Magister Pharmaciæ. Ein Bd., pp. 335. 1897. M. 4.60.

Verlag von Gebrüder Borntraeger—Berlin. Grundprobleme der Wissenschaft. Briefe eines unmodernen Naturforschers von Dr. Adolf Wagner. Ein Bd., pp. vi, 255. 1897. M. 5.00.

Author. — Beiträge zur Entwickelungsgeschichte pharmacognostisch wichtiger Samen. Inaugural Dissertation zur Erlangung der Doktorwürde vorgelegt der hohen philosophischen Fakultät der Universität Bern von Julius Otto Schlotterbeck, Michigan. Pamphlet, pp. 55, with five lithographic plates.

Koloniaal Museum te Haarlem. Bulletin, Juni 1897. Inhoud: I. Lijst van insecten, schadelijk vor de koffiecultur. II. Beschrijving der schadelijke insecten van de kina. Pamphlet, pp. 18.

—— Bulletin, Juli 1897. Inhoud: Verslag over het jaar 1896, met Bijlagen.

Reviews.

Die Neuen Arzneidrogen aus dem Pflanzenreiche. Von Dr. Carl Hartwich, Professor der Pharmacognosie am Polytechnikum in Zürich. Ein Band, 469 Seiten. Verlag von Julius Springer in Berlin. 1897. $3.80.

Wohl ist es ein verdienstvolles Unternehmen, das Gros der als vermeintlich neue Heilmittel durch die Fachpresse und durch die Handelslisten über den Tagesmarkt zu meistens ephemerem Dasein gelangenden Arzneidrogen von Zeit zu Zeit durch sachkundige Feder Revue passiren zu lassen; und das um so mehr, und mit desto grösserer Sichtung und Sonderung, als durch literarische und mercantile Speculation die zum Zwecke der Volksmedizin meistens längst abgesuchte und bekannte Flora überseeischer Länder neuerdings nicht selten für eine Blüthenlese angeblich neuer Pflanzenheilmittel herbeigezogen wird. Diese aber haben bei den meistens recht alten Volksstämmen auch neu erschlossener Länder, gleich den traditionellen Pflanzenmitteln des Mittelalters, ihre Prüfzeit grösstentheils längst hinter sich und das Bewährte ist mit den anderen Schätzen der alten Kulturwelt längst zugeführt und ausgenutzt worden. Das Facit dieser langen Suche und Sichtung ist daher in neuerer Zeit numerisch und relativ ein ausserordentlich geringes gewesen und der erweiterte Welthandel und Verkehr und alle mercantile und sonstige gewinn- oder ruhmsüchtige Speculation der Neuzeit haben nicht vermocht, dem Drogenmarkte und den Pharmacopöen eine nennenswerthe grössere Anzahl wirklich neuer und werthvoller, allgemein gebrauchter Arzneidrogen zuzuführen. Vielmehr ist die Zahl der letzteren nicht nur in den Arzneibüchern, sondern auch in der Volksmedizin stetig geringer geworden, trotz der speculativen Rüstigkeit des Drogenhandels, der pharmaceutischen Grossindustrie und der Fachpresse und der zum Theil durch diese Factoren grossgezogenen Sucht nach „neuen Mitteln“ und der Aera der Fluid-Extraxte, der Concentrationen der Eclectiker und der Organo-Therapie. Bekanntlich ist in dieser steeple chase der Apotheker der „ehrliche Makler“, welcher für diese Art Sport für den unliebsamen Gewinn einer Curiositätensammlung ephemerer und absoluter Arzneimittel die Unkosten zu tragen hat.

Nicht nur die Fülle, sondern mehr noch die Leichtfertigkeit, mit der vermeintlich oder angeblich neue Arznei-Drogen und Mittel jetzt in die Preiscourante der Drogisten und Fabrikanten und durch deren Speculation in Gratisproben auf die Tische der Aerzte und in die Kliniken lanzirt werden, legen den Wunsch, ja das Erforderniss nahe, eine übersichtliche Zusammenstellung neuer Mittel nicht blos separatweise, sondern auch mit möglichst strenger Sichtung und Sonderung zu vollziehen. Nur dadurch kann die Hochfluth ephemerer Speculationsartikel eingedämmt und der Drogenmarkt, die Arzneibücher und die Fachliteratur von minderwerthigen Novitäten und entbehrlichen Paralelmitteln resp. Substituten gesäubert werden. Ohne prompte Kritik und vorläufige besonnene Ablehnung speculativer Novitäten werden mercantile Gewinnsucht und beruflicher Dilettantismus das Chaos neuer problematischer Mittel stets vergrössern.

Erfüllt das vorliegende Werk als referirende Compilation und als Nachschlagebuch seinen Zweck in trefflicher Weise, so hat es in der unbeanstandeten Aufnahme von vielem ungeläutertem Material auf Treu und Glauben zu weite Toleranz walten lassen. Sonst aber ist die Bearbeitung desselben eine sorgfältige und umsichtige und bekundet sich der durch frühere Arbeiten und durch seine schöne Schrift: „Die Bedeutung der Entdeckung Amerika's für die Drogenkunde“ auch im Auslande wohl bekannte und geschätzte Verfasser durch dieses Werk und durch das treffliche Einleitungskapitel zu demselben als gewandter und sachkundiger Pharmacognost und Schriftsteller.

Verfasser und Verleger des trefflichen Buches haben sich durch dessen Herausgabe ein anerkennenswerthes Verdienst erworben, welches in weiteren Ausgaben durch eine wünschenswerthe, zweckmässige und zulässige strengere Sichtung und Sonderung in der Auswahl und Aufnahme des Materials dem Berufe und der Wissenschaft in noch höherem Maasse zu gute kommen kann und sollte.

Für eine fernere Fortführung und Neubearbeitung des Buches mag es zweckdienlich sein, auf einige bei den betreffenden Artikeln vielleicht übersehene, indessen berücksichtigungswerthe Arbeiten zu verweisen; diese sind unter anderen die Arbeiten von Prof. Dr. Power über die „Loco“kräuter (Pharm. Rundschau 1888, S. 101; 1889, S. 134 und 168); über Robinia (ibidem, 1890, S. 19); von Prof. Lloyd über Cimicifuga (ibidem, 1886, S. 30); von Dr. C. Mohr über Perezien (ibidem, 1884, S. 1); von Prof. Maisch über Xanthoxylum (Am. Journ. Pharm. 1890, p. 321); sowie Arbeiten über Polygala Arten (Pharm. Rundschau 1889, S. 86, 191 und 236 und 1892, S. 51) und über Gleditschia (ibidem, 1887, S. 114, 249, 250 u. 272).

Bei der durchweg genauen Literaturangabe im Texte war die Zugabe einer Liste der einschlägigen periodischen Fachpresse schwerlich nöthig. Die theilweise Aufzählung derselben enthält bei der bekannten unfertigen Kenntniss deutscher Authoren und Journalisten über die überseeische Fachpresse manche Irrthümer. So sind höchst geringwerthige Blätter aufgeführt, welche im Texte nicht einmal citirt worden sind oder werden konnten (No. 57) und längst eingegangene aufgezählt (No. 113. 132. 139. 143.), während andere im Texte citirte Journale in der Liste unerwähnt geblieben sind, z. B. das „Druggist's Circular“, oder in der Angabe des Titels oder des Verlagsortes unrichtig bezeichnet sind (No. 73. 81. 84. 112. 123. 133.). Ob die im Texte und in der Liste nicht genannten jährlich erscheinenden “Proceedings of the Amer. Pharmaceutical Association“ unberücksichtigt geblieben sind, ist im Buche nicht ersichtlich. Dasselbe gilt für den monatlich erscheinenden „Western Druggist“, für den halbmonatlichen „Americ. Druggist and Pharmaceut. Record“ und für das verbreitetste englische Wochenblatt „Chemist and Druggist“.

Fr. H.

Jahresbericht der Pharmacie. Herausgegeben vom Deutschen Apothekerverein. Bearbeitet von Dr. Heinrich Beckurts, o. Professor an d. techn. Hochschule in Braunschweig. 30. Jahrgang, 1895 (Der ganzen Reihe 55. Jahrgang). Vandenhoeck und Ruprecht, Göttingen 1896. M. 22.00.

Somewhat more than a year ago the writer reviewed the German Jahresbericht at some length, without, however, going into the details of the work. Special attention was called to the importance of general reports of a year's progress made not only by the different sciences, but in

the various departments of one and the same science. The writer had no intention to depreciate the valuable work done by the author and publishers of the Jahresbericht. He himself has had too frequent occasion to make use of this annual. At times it was the only means of securing the desired information. Again on other occasions it was found useful, because it facilitated the finding of information widely distributed though available in the original form. "Of the three annual reports that of the German Apothecaries' Society is not only the oldest, but also the most complete," were the words in which the writer expressed his appreciation of the Jahresbericht.

The statement that the Jahresbericht is not ideal is not necessarily derogatory to the report as far as it goes. The author of the report will certainly be willing to admit that with the aid of five or ten co-laborers he could get out a better report than with but one. This is nothing discreditable to the author or his assistant, whose herculean labors command admiration.

To criticize does not necessarily mean to condemn. What the writer desired to emphacize in connection with the Jahresbericht, as well as in connection with the Report on the Progress of Pharmacy of the American Pharmaceutical Association, was the need of annual surveys, Jahresüberblicke, as well as of catalogues of abstracts. Such surveys constitute the most important part of several annuals, e. g. in the field of chemistry. Such a report on the sugars, written by Prof. Stone for the American Chemical Journal, will be found in part on an other page of this number.

Without underestimating the importance of the work done by the reporters on the progress of pharmacy in Germany, England and in this country let us hope that the near future will witness an extension of their work, not so much in the line of greater completeness of the abstracts catalogued, but in the addition of a new department that will enable others than the specialist to learn just what progress has been made in the various departments of pharmaceutical activity.

E. K.

Anatomischer Atlas der Pharmacognosie und Nahrungsmittelkunde von Dr. A. Tschirch, Professor der Pharmacognosie, Direktor des pharmazeut. Institutes der Universität Bern, und Dr. O. Oesterle, Assistent am pharmazeut. Institute der Universität Bern. Leipzig, Chr. Herm. Tauchnitz. 1897.

Number 12 of this invaluable work deals with the nutmeg and mace, *Myristica* sps., flaxseed, *Linum usitatissimum* L., valerian root, *Valeriana officinalis* L., coca leaves, *Erythroxylon coca* Lam., and Paraguay tea, *Ilex paraguayensis* Lamb., and other *Ilex* species.

Myristica fragrans Houtt., the common nutmeg, and *Myristica argentea* Warb., the long nutmeg, sometimes called the Makassar or Papuan nutmeg are very thoroughly described and freely figured. In addition to a description of the adult plant and its parts, a very detailed description of the embryology is given. The common nutmeg differs from the long nutmeg mainly in its external form and size. The former is usually from 20 to 30 mm. long and 15 to 20 mm. wide; the long nutmeg is longer and narrower, 20 to 45 mm. long and 13 to 25 mm. wide and is broadest at the base. Some histological differences are also to be noted. It is not regarded as important, however, in a commercial way, to separate these kinds, since they are of about equal quality.

The genuine Banda mace is the arillus from the seed of *Myristica fragrans*; the same structure from *Myristica Malabarica* Lam., Bombay mace, is not fragrant and is used as an adulterant. The Papuan mace from *Myristica argentea* Warb. is fragrant and in structure resembles the Banda mace. Much interesting detail is given for which the reader must turn to the original.

The remaining subjects discussed are likewise fully treated. The quality of matter, printing and plates of the present number is of the same high standard we have noted in the foregoing parts.

Rodney H. True.

Grundprobleme der Wissenschaft. Briefe eines unmodernen Naturforschers von Dr. Adolf Wagner. Ein Bd., pp. VI, 255. Berlin, Gebrüder Borntraeger. 1897. M. 5.00.

Dr. Wagner has long held that the whole world of science, and especially biological science, has been following false gods for the last half century and more. This work is intended to make clear the philosophical defects of modern science and to present a truer conception of nature than that which science affords. It is divided into two parts, the first treating of general philosophical principles, the latter concerned with special problems, and especially with showing the true relation between plant and animal.

The current science which looks to stating its results in terms of matter and motion can not distinguish the vegetable kingdom from the animal, and so asserts the existence of forms of life intermediate between the two great kingdoms. Wagner, who studies the problem not merely from the physiological side, but from the side of psychology, finds an absolute difference in the possession by the animal of sensations and consciousness.

This illustration shows the "unmodern" character of the work, which will probably gain the hearing that usually falls to works out of sympathy with ruling ideas. It is, however, well worth reading for its matter, and is written in a clear style and lively manner which make it enjoyable.

E. A. Birge.

Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen.
Lieferung XXI: Grundwasser—Herzstück.
" XXII: Hessische Kurve—Isolator.
" XXIII: Isolirschichten—Kataster.
1897. M. 5.00 pro Lieferung. Preis des ganzen Werkes M. 175.00.

This excellent work is progressing as rapidly as is consistent with good work. The three numbers before us make the same favorable impression left by their forerunners. Inasmuch as two additional Lieferungen will complete the fifth volume it will more satisfactory to postpone a detailed review until the completion of the volume. Originally this was to have completed the work, but a mere glance at the primes will make it doubtful whether the further allowance of two volumes will suffice. Inasmuch as the subscriber will receive gratis anything above seven volumes, he can gain only by this liberal policy.

E. K.

Erster Decennium der Helfenberger Annalen, 1886|1895. Eine Zusammenstellung der Werthe, Methoden und Studien. Herausgegeben von Eugen Dieterich. Ein Band, pp. 462. Verlag von Julius Springer, Berlin. 1897.

Shortly after the establishment of the Helfenberger Fabrik, its manager, Eugen Dieterich, began to publish the various scientific investigations conducted there, together with business communications, in the form of "business reports." Later, in 1886, he decided to separate the scientific from the purely commercial reports, and thus appeared the "Helfenberger Annalen," which have been published annually since that time.

The aim of this new periodical was to publish the results obtained in the analysis of crude drugs and galenical preparations, the original analytical methods devised as well as other original work, and lastly, the critical experimental examination of the methods proposed by other investigators. In all of this work the author confined himself to such substances as were employed in his laboratories, and did not intend to cover all the articles of the materia medica. The fact that generally very large quantities of material were worked upon, and that the results often represent a considerable number of determinations, makes the data obtained all the more valuable.

After ten years of successful publication of the "Annalen," the author decided to arrange in groups all of the work that had appeared in that time; also, to compile all the numerical results in tables and thus allow of ready survey of the whole. The result is to be found in the volume now before us.

The book is divided into two parts, of which the first deals with crude drugs; the second, with galenical preparations. The first part treats particularly of gums, resins, fixed oils and fats, volatile oils, waxes, and paraffines. In this part, the estimation of morphine in opium and work on Hübl's iodine-addition method for the identification of fats, oils, and resins have been given special consideration by the author, the space devoted to the former topic alone being over 100 pages. In the second part, among other galenical preparations, we find treated aromatic waters, fluid and solid extracts, iron preparations, tinctures, and ointments. Of these the work on alkaloidal estimation of extracts is especially thorough, while in the estimation of the so-called indifferent (colloidal) iron compounds, as lactosaccharate, dextrimate, albuminate, peptonate, etc., the author has given us the results of his experience in one of his special lines of work.

The work on the whole, in its present convenient form, is a great aid to all who are engaged in manufacturing pharmacy, whether on a large or small scale. The experiences of the author during the last decade should also be of considerable value to the Pharmacopœia Committee of Revision. With the completion of this volume, the author resigns the editorship of the Helfenberger Annalen, entrusting it to his son Karl, the present technical head of the establishment. May he nevertheless continue in the future in his valuable contributions to pharmacy as he has done in the past. *Richard Fischer.*

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EDITORIAL.

American Pharmaceutical Association.

During the past month a number of national pharmaceutical organizations held their annual meetings: the British Pharmaceutical Conference met at Glasgow; the German Apothecaries' Society at Strassburg; the Swiss Apothecaries' Society at Solothurn; but it may be safely assumed that the American Pharmaceutical Association for 1897 had the ideal place of meeting. Like the White Mountain meeting in 1892, this year's gathering on the shores, or more correctly, in the centre of that group of lakes and bays known collectively as Lake Minnetonka, will long be remembered by those who attended.

Although the attendance was fair and though the sessions were well attended, the distance of the place of meeting from the centre of membership made itself felt. However desirable it may be to meet from time to time in sections of the country where the membership of the association is not strong, it must not be forgotten that any organization depends for its best work not so much on large numbers or new comers, but on the older members who have been faithful and constant in their service.

Not many years ago the association was carried away by the enthusiasm of some who should have liked to see every druggist in the and a member of the American Pharmaceutical Association. It is fortunate for the association that this dream was not realized. Not only has this dream fallen short of realization, but many of the large number of new members admitted annually dropped off after having been members for a year or two. Indeed the percentage of those who, after being elected, did not complete membership, is by no means insignificant. The information that this year a larger percentage had at the time of meeting completed membership than ever before was, therefore, greeted with applause. It should be mentioned in this connection that over forty of these new members are apothecaries of the U. S. Army and Navy, for the improvement of whose position the Association has been active during the past few years.

Whereas no business of an epoch-making character was transacted, a number of propositions of considerable import came up for consideration. On the one hand there was, as usual, a tendency here and there to rush the work of the association; on the other hand a lack of preparation to properly discuss the work manifested itself. Thus, e. g., most members are not sufficiently acquainted with the work of the various standing committees. Their reports are read hastily or only in part, so that even those who are somewhat familiar with the work of a given committee are, nevertheless, not ready to commit themselves and the association by voting aye or nay on a set of resolutions.

It certainly would be a great advantage to have most or all of the committee reports printed together in advance and mailed to the members of the association. Each person would thus have an opportunity at least to familiarize himself with

the past work of the committees and their recommendations for the future. If the ten, twenty or thirty minutes now spent in hastily reading a report could be utilized for its better discussion, a material gain would accrue to the sessions. Thus certain reports year after year are read and allowed to take "the usual course" without a word of comment. Other reports are read in part when it becomes apparent that in order to take rational action it is necessary to read the report a second time; or, if time presses, the part read is summarily disposed of without query or comment.

A similar indiscriminating custom prevails as to the reading of papers. A person who has a paper with possibly a single item of interest is accorded as much time as he who has a most interesting and valuable paper to present. If the reading of a paper actually requires less than five minutes, the speaker has the right to use the other five minutes allotted him to recapitulate what he has already read. It seems that some regard should be had for the relative value of papers and the time necessary for their reading. Furthermore it might be well to provide in advance for a proper discussion of some of the more important topics presented.

Last year the **Commercial Section** managed to dispose of one of the two sessions allotted to it in a rather grotesque manner. This year it seemed equally difficult to dispose of part of the time allotted to this section for a single session. Last year at least one paper besides the chairman's address was read. This year there was none.

Almost every year some person considers it his duty to remind the members that the American Pharmaceutical Association was founded by retail pharmacists for the retail pharmacists. Some other person will inform the association that he is not so much interested in the discovery of a new alkaloid by some ultra scientist—this in the minds of many is still the highest goal of scientific research, though the discovery may be but accidental—but that he has come to consider matters which to him mean dollars and cents. The intensely "practical" man begrudges the success the scientifically inclined member has achieved, yet he does not offer to raise a hand to redeem the commercial section in its rapid race to ridicule.

The majority of the members in attendance at the Minnetonka meeting were practicing pharmacists. Deduct those college professors who also own and conduct pharmacies and scarcely more than a handful of professors and journalists will remain. Yet this large majority of practicing pharmacists could not make a success of a single session of this section. The patent and trade-mark question, the free alcohol problem and others of like commercial import have been monopolized by the section on education and legislation until nothing seems to remain for this section except to simply perpetuate its organization. It has been remarked in a sarcastic manner that next year the section is to be run "along entirely new lines." Whether new or old let us hope that the next year will either revive this section to a respectable activity or effectually bury it.

The **Scientific Section** came very near meeting with a sad fate. Two of the sessions were practically abandoned. This was partly due to a misunderstanding with regard to a number on the social program. Besides, the attraction of an excursion to the Twin Cities on a beautiful morning proved too great when counterbalanced by the prospect of three stiff sessions of the scientific section in one day. Fortunately the officers of the section and a few others supported by a number of late risers managed to dispose of the routine thus leaving the third or evening session for the reading and discussion of reports and papers. This evening session was well attended and every one, realizing his responsibility for the partial failure of the two days' sessions, entered upon the work with an earnestness seldom witnessed, the section remaining in session until after midnight.

Especial attention should be called to the work of the Special Committee on Research under the able chairmanship of Prof. Prescott. This committee was created by the section at the suggestion of Dr. Alfred Dohme, when chairman, at the Denver meeting. Last year at Montreal it made its first report and was reorganized on a somewhat better basis. The U. S. P. Revision Committee is represented on this committee by its chairman and has given the special committee substantial assistance. As time goes on this committee ought to grow stronger and accomplish valuable results.

The number and quality of papers in general was fair and several were good and very valuable. The discussion of the papers, however, was not what it ought to have been. A noteworthy inference could be drawn by any observant listener. Those statements which had little or no experimental evidence to back them gave rise to some of the liveliest discussions. This were not strange, but for the fact that an exceedingly simple test or a series of simple experiments would at once settle the whole controversy. Such a state of affairs indicates an incompleteness in a paper which could easily and should be avoided.

The **Section on Education and Legislation** was conducted much more creditably to the association than last year. Moreover the Scientific Section is indebted to this section for the reading and discussion of several scientific papers which otherwise could have been read by title only.

The work of the section was notably along the line of legislation, education receiving but minor attention in only a few papers. Two years ago an important duty was assigned to this section and a large amount of work was creditably performed by its secretary. An acceptable report of progress was made last year and the chairman was requested by a formal resolution to appoint a committee of three to continue the work already done and to seek the cooperation of the state pharmaceutical associations, state boards, and schools and colleges. The sense of the meeting with regard to this committee was freely and unmistakably expressed but, as was shown this year, totally ignored. The result was that the report as presented was ordered to be printed and distributed without a discussion. Unfortunately a number of papers met with a similar fate.

The final outcome of all this is rather unfortunate. There is little sense in merely listening to papers while sitting on uncomfortable chairs and when the speaker has to compete with an orchestra stationed on a veranda not far off. We might read the same papers, when printed, at home in greater comfort. Aside from the personal and social features of such a gathering, the American Pharmaceutical Association should come together for the purpose of discussion.

In trying to get an expression of opinion from the various state associations, state boards and colleges and schools, the committee, on account of the lateness of its action, met with a signal failure. In possibly no small number of instances the votes collected expressed the opinion of a single person, not of a society, or board or educational institution. This will continue if no other way of rousing the interest of the masses can be found.

To formulate a model pharmacy law requires more than a vote on a hundred or more questions. To quote a gentleman greatly interested in this movement, it requires the education of the American would-be pharmacist, an education which is not simply that of the colleges or universities.

To accomplish this education will require a large amount of earnest labor in the state associations and outside on the part of individual members deeply interested in this very important problem. The organization of the pharmaceutical state, the proper function of pharmaceutical associations, boards and educational institutions, the relation of these organizations to the state and vice versa, these are questions which should be broadly discussed before a model law is attempted in all its details. It is true that most of these questions have been discussed, but the discussion has largely been like that on the tincture of iodine in the scientific section. The discussions have largely been based on personal and local prejudices and have often revealed an astonishing disregard for, or even an ignorance of facts. We need first of all men who will make a special study of these problems, men who will look at them broadly and intelligently. This and the work of educating the pharmacist will not be accomplished in a year or two. In the attempt to create a "model" pharmacy law on paper we should, therefore, not look to what we might possibly accomplish in a year or two, but at what we should like to aspire to in the next generation.

The **Social Program** as carried out was greatly enjoyed by all who attended. Both the hotel and its immediate surroundings were well nigh ideal for a gathering of this kind, which partook almost of the character of a large family reunion. The weather was beautiful and lent its additional charm to the picturesque landscape. In addition to the usual features, such as a reception, a boat-ride on the Upper and Lower Lake, a trolley and carriage ride through the Twin Cities, etc., the visitors are indebted to the Local Committee for an intellectual treat of very high order. The thanks of the association were especially tendered President Northrop of the State University for the able and very interesting address on education given on Wednesday evening, also for the liberal manner in which all of the doors of the University were thrown open to the visitors on the following day.

It may not be amiss to call attention to the fact that two of the oldest colleges of pharmacy, arranged each a successful meeting of its alumni. It must have been gratifying to the representatives of these eastern institutions to meet so many alumni in the West, taking an active interest in the welfare of their calling. It is indeed a pardonable pride that manifests itself when the children of a common alma mater look backward to happy students' days and to honor themselves by kindly and gratefully remembering their departed teachers.

Since one of the drug journals announced very recently that a certain "idea" had finally captured the last stronghold of conservative American pharmacy and rejoiced editorially in this fact, it should be clearly understood that the members of the American Pharmaceutical Association know how to enjoy themselves without bringing their meetings down to the level of a Kirmis or county fair. It is for the very reason that the above mentioned announcement did not prove true that most of the members who were at Lake Minnetonka carry home with them the most pleasant recollections of this year's meeting. May the meeting at Baltimore in 1898 be equally pleasant and may we profit by some of this year's experiences and make it even more profitable.

E. K.

ORIGINAL CONTRIBUTIONS.

The Caffein Compound of Kola.*

Part. II.
KOLATANNIN.

By *James W. T. Knox* and *Albert B. Prescott.*

The investigation of the caffein compound in kola conducted by us last year[1] showed that it was a kolatannate of caffein instead of a glucosid as formerly supposed. This question then arose: Is the tannin of this body identical with the free tannin existing in the kola nut? In the very brief examination made at that time it seemed that there was some difference, for combustions of both kinds of the tannin showed a difference in the respective amounts of carbon and hydrogen of each. No interpretation of the results was made at that time, for we considered the data insufficient, and the question was not settled.

It became necessary, in order that this point might be positively determined, to make a thorough comparative study of these two forms of kolatannin and the research has been continued along this line with results which are stated in the following pages.

Classification of Tannins.

Several different means of classifying tannins have been proposed, such as "physiological" and "pathological"—referring, of course, to their origin in the plant; glucosidal and non-glucosidal; "iron-blueing" and "iron-greening"; tannins which are tanning agents and those which are not; those which yield a tri-hydroxy-phenol by sublimation or by fusion with potassium hydroxid, and those which yield a dihydroxy-phenol by sublimation, or the salt of a dihydroxy benzoic acid by gentle fusion with potassium hydroxid.[2]

Trimble[3] suggests a classification, not as a final one but which answers very well for the present, in view of the still very defective knowledge of this class of bodies. He proposes a division of them into "the gall tannin group" and "the oak tannin group." The tannins of the gall tannin group contain 50—52.5 p. c. of carbon and 3.10—4.50 p. c. of hydrogen; those of the oak tannin group contain, in round numbers, 60.00 p. c. carbon and 5.00 p. c. hydrogen. This classification holds good for the following reactions also:

	Gall Tannin Group.	Oak Tannin Group.
Ferric salts.	Blue color and precipitate.	Green color and precipitate.
Calcium hydroxid.	White precipitate becoming blue.	Light pink precipitate becoming red and then brown.
Bromin water.	No precipitate.	Yellow precipitate becoming brown.

Under this classification kolatannin is to be compared with the oak tannin group, for its composition and reactions coincide more nearly with those of oak tannin than with those of gallotannic acid. We include herewith a brief summary of some important work done on oak bark tannins, not only for its historical interest, but because it has a bearing indirectly upon our own work on kolatannin.

Recent Literature of Oak Bark Tannin.

In February 1880 Böttinger[4] published a lengthy article on "oak red," phlobaphene and tannin which was followed about a month later by Etti's[5] publication of his own work on oak tannin—a valuable contribution to its literature. The methods used by them for preparation of their working samples differed radically, the botanical source of their barks or extracts was unknown to them (or, if known, was not stated), the tannins obtained possessed properties different from each other, and it is not strange that the results obtained by these investigators were at variance in many particulars. If we may judge by their descriptions, it would seem that Etti's method of separation was much more likely to yield a pure product than that used by Böttinger, although by no means free from objections. Without doubt this work of Etti and that of Löwe[6] dated in September of the same year, but which did not appear until the following year added more to the knowledge of oak tannins than any previous contributions had done. The methods used by them are noteworthy, because they were radical departures from the old lead acetate methods formerly so much in vogue.

Etti extracted the oak bark with very dilute alcohol under gentle heat and added acetic ether and ordinary ether to the extract. After agitating, the faintly red-colored ethereal layer was separated, the ether recovered by distillation and used again for the same purpose. After distilling the ether, the alcoholic solution of tannin remaining behind was found to contain some crystals of ellagic acid which were removed by filtration and the filtrate evaporated to dryness on a water bath. The residue, a reddish-white powder, was oak tannin, mixed with a little phlobaphene, amorphous resin and gallic acid; the two last named substances were separated by extracting the powder with non-alcoholic ether; it was next treated with a mixture of three parts acetic ether and one part ethyl ether, which removed the tannin and left the phlobaphene undissolved. After distilling off the solvent, the pure tannin remained behind as a reddish-white powder. Etti insists, too, that if the ethyl acetate be used again for a solvent it must be washed with sodium hydroxid solution and redistilled before use, as the tannin tends to decompose it slightly into acetic acid and alcohol, while the tannin is itself partially converted into its anhydrid.

The method of Böttinger depends on the separation of phlobaphene from tannin solutions by means of its comparative insolubility in water. The tanbark is extracted first with ether, then with alcohol, the alcohol solution is evaporated to dryness, and the residue extracted again with ether which removes the last traces of wax and fat. By warming the residue with water on a water bath,

* Read at the Minnetonka meeting of the A. Ph. A.

[1] Knox and Prescott, 1896: Proc. Am. Pharm. Assoc., 44, p. 136.

[2] Prescott: Organic Analysis, p. 466.

[3] Trimble: The Tannins, II, p. 131.

[4] C. Böttinger, 1880: Annalen, 202, p. 269.

[5] C. Etti, 1880: Monatsh. f. Chem., 1, p. 262.

[6] J. Löwe, 1881: Zeitsch. f. Anal. Chem. 20. p. 208.

a partial separation is effected of the insoluble phlobaphene from the soluble tannin. After filtration the tannin solution, still containing traces of phlobaphene, is repeatedly evaporated and redissolved, until upon diluting the liquid very largely, and cooling it, no precipitation is had. On evaporating this solution, a light colored residue is obtained which is soluble in water and which he considered the pure tannin.

Löwe[7] extracted the oak bark with 90 percent alcohol, and distilled the extract in vacuo to syrupy consistency. Water was then added, which precipitated a large quantity of anhydrids: after filtration common salt was added to saturation, which precipitated the remaining anhydrids completely. The liquid, after filtration, was agitated with ether repeatedly until this solvent would remove nothing further from the solution. The remaining ether was dissipated by gentle heat and after cooling the solution was shaken out with acetic ether. The acetic ether was removed by distillation and cold water was added to the remaining residue as long as precipitation ensued, after which it was again filtered and evaporated slowly in a vacuum desiccator to a dry mass, which is soluble in water and becomes cinnamon-brown on being pulverized.

It will be noticed that the methods of Etti and of Löwe have much in common, the principal difference from the other methods being in the use of ethyl acetate, an immiscible solvent. It is difficult to say to whom credit should be given for the first application of this solvent to the preparation of tannin. In 1873, however, Löwe[8] mentions having used it in his work on sumach tannin, while in 1872 he also made use of it as a separative solvent for gallotannic acid.

Etti ascribed the formula $C_{17}H_{16}O_9$ to his tannin: a "first anhydrid" $C_{34}H_{30}O_{17}$ was formed by heating the tannin at 140° C. He separated a ready-formed anhydrid from the bark, corresponding to this one, and made use of its barium salt $C_{34}H_{28}BaO_{17}$ to determine its formula. By boiling it with dilute hydrochloric or sulphuric acid, it loses another molecule of water, forming a second anhydrid, $C_{34}H_{28}O_{16}$. The third anhydrid he prepared by boiling the pure tannin with dilute mineral acid, whereby two molecules of tannin lost three molecules of water, forming a body to which he ascribed the formula $C_{34}H_{26}O_{15}$. This anhydrid corresponds, in Etti's opinion, to Oser's oak red. Boiling the pure tannin with potassium hydroxid solution for some time, formed the first anhydrid, identical with the so-called oak bark phlobaphene; this was separated by acidulating the alkaline solution with mineral acid and filtering out the precipitated anhydrid.

By various experiments, such as boiling the tannin with dilute acids, digesting it with ferments, etc., he arrived at the conclusion that oak tannin was not a glucosid, but that such evidence of glucose as had been found by other investigators was due to the accidental presence of glucose in the sample.

He proposed a structural formula, the same as that of digallic acid with three hydroxyl groups replaced by three methyl groups, he having detected methyl chlorid by burning the gas formed by heating the tannin with concentrated hydrochloric acid in a sealed tube.

[7] J. Löwe, 1873: Zeitsch. f. anal. Chem. 12, p. 128.
[8] J. Löwe, 1872: Zeitsch. f. anal. Chem. 11, p. 365.

Böttinger's work was principally on oak phlobaphene and oak red, which he considered identical. The oak red was formed by boiling the tannin with dilute mineral acid. He ascribed the formula $(C_{14}H_{10}O_6)_2.H_2O$ to it and believed oak tannin to be a glucosid.

Löwe proposed the formula $C_{28}H_{28}O_{14}$ for the tannin he prepared and $C_{28}H_{22}Pb_3O_{14}$ for the lead salt. He also prepared oak red by the usual process of boiling the tannin with dilute acids and obtained in addition to the oak red, $C_{28}H_{22}O_{11}$, a by-product of which he made a combustion, but did not identify. It was not sugar, however, and he states that oak tannin does not conduct itself as a glucosid. The oak phlobaphene is, according to his statements, a fourth anhydrid of oak tannin of the formula $C_{28}H_{24}O_{12}$, and forms a lead salt $C_{28}H_{22}O_{12}Pb$.

A somewhat extended and not altogether good-natured controversy between Böttinger and Etti followed the publication of the latter's paper, Böttinger[9] insisting upon the correctness of his own work, and holding to his first statement that oak tannin was a glucosid. Etti,[10] on the other hand, contended that Böttinger's methods were faulty, that ready formed glucose would not be separated from the tannin by Böttinger's process, and therefore sugar would of course be found in the solution after boiling the tannin with dilute acids. He performed a number of experiments tending to prove the correctness of his position, following Böttinger's methods also and criticising him severely. Böttinger[11] subsequently modified his statements considerably, but without conceding anything of importance.

In 1883 the next contribution appeared, in which Etti[12] again commented on Böttinger's work and quoted Löwe in confirmation of his own results. He reported a new tannin, of formula $C_{20}H_{20}O_9$, from *Quercus Pubescens*, while the other he had since learned was from *Quercus Robur*. This new tannin colored solutions of ferric salts green, while the first one produced a blue color with them. During this investigation the objection already noted to the use of ethyl acetate, viz. its tendency to decompose the tannin, became so marked as to necessitate a different method of separation. The most important points of this new method are the use of alcoholic ether as a solvent for the tannin, phlobaphene and green resin. The resin is removed from the resulting product by benzene and the phlobaphene by careful addition of lead acetate to the tannin solution. The precipitate of lead tannate is yellow, but if any anydrid (phlobaphene) be present, the precipitate will be colored more or less reddish-brown, depending on the proportion of it to the tannin. Lead acetate is added until the color of the precipitate indicates that all of the anhydrid has been precipitated. After filtering, the liquid is again exhausted with alcoholic ether, the ether removed by distillation and the residual liquid evaporated to dryness on the water bath. A rather remarkable peculiarity of Etti's work is that both of these tannins are nearly insoluble in water—.6 of tannin in 100. of water—while the experience of other workers has been quite generally that tannins are soluble.

[9] C. Böttinger, 1881: Berichte, 14, p. 1598.
[10] C. Etti, 1881: Berichte, 14, p. 1826.
[11] C. Böttinger, 1881: Berichte, 14, p. 2390.
[12] C. Etti, 1883: Monatshefte, 4, p. 512.

Etti claims to have formed four anhydrids of this tannin, $C_{20}H_{20}O_9$.

First anhydrid,	$C_{40}H_{38}O_{17}$.	Oak phlobaphene, dried at 120°.
Second "	$C_{40}H_{36}O_{16}$.	By boiling phlobaphene with 1:12 sulfuric acid and washing precipitate first with water, then with alcohol and evaporating the alcoholic solution.
Third "	$C_{40}H_{34}O_{15}$.	Dried at 125°. By boiling tannin with dilute sulfuric acid and collecting the precipitate.
Fourth "	$C_{40}H_{32}O_{14}$.	By heating in 25 p. c. sulfuric acid containing 20 p. c. alcohol in sealed tube at 130° for four hours.

Etti believed also that four anhydrids were formed from the other tannin ($C_{17}H_{16}O_9$) and gave this view support by his own figures and some also of Oser, of Böttinger, and of Löwe. This would be apt to mislead the casual reader into attaching more importance to this theory of the four anhydrids, than is warranted by the actual results given by Etti. It would hardly seem that he was justified in making this use of the work of the other investigators. As a matter of fact he has selected figures here and there which gave support to his views, but ignored others of equal importance which did not harmonize with his ideas, e. g. he quoted Löwe's figures for the analysis of oak red, but did not mention his work with the lead salts of oak red, which brought him to the conclusion that the formula of oak red was $C_{28}H_{22}O_{11}$. There is no apparent reasen for doubting that this work was equally as reliable as that which Etti quoted, and to omit it gives a careful reader the impression that deductions made from such peculiar isolated facts would not necessarily be of great value. The chart is here appended:

		Calculated.	Found.			
Tannin, $C_{17}H_{16}O_9$.	Carbon	56.04	56.31	56.06		
	Hydrogen	4.40	4.63	4.69		
First Anhydrid, "Phlobaphene", $C_{34}H_{30}O_{17}$. Grabowski's oak red.	Carbon	57.46	57.28	57.62		
	Hydrogen	4.22	4.64	4.33		
Second Anhydrid, $C_{34}H_{28}O_{16}$.	Carbon	58.96	58.76			
	Hydrogen	4.04	4.20			
			By Oser.	By Böttinger.		By Etti.
Third Anhydrid, $C_{34}H_{26}O_{15}$, Oser's oak red.	Carbon	60.58	60.70	60.19	60.08	60.33
	Hydrogen	3.86	4.03	4.22	3.94	4.03
			Found by Löwe.			
Fourth Anhydrid, $C_{34}H_{24}O_{14}$, Löwe's oak red.	Carbon	62.20	62.339	62.197	61.997	
	Hydrogen	3.66	4.154	4.015	4.056	

Böttinger[13] published in the same year, 1883, a piece of work done on the bromin derivatives of oak tannin. By direct addition of bromin to the watery extract of oak bark he formed a dibrom oak tannin, $C_{19}H_{14}Br_2O_{10}$, which was capable of forming a pentacetyl derivative. "By careful manipulation"—he does not describe it—he converted the dibrom- into a tetrabrom-tannin, which also formed a pentacetyl compound. This seems to be the first work on bromine derivatives.

In 1884[14] he investigated hemlock tannins by means of their bromin-compounds precipitated directly from its infusion by addition of bromin. Later[15] in the same year he prepared bromin compounds of a number of bark tannins by adding bromin directly to their infusions. Acetyl compounds of these were formed and analysed.

Etti,[16] in a brief paper shortly afterward, discussed the points of difference between gallotannic acid and oak tannin. He also pointed out that by reason of its very hygroscopicity acetic anhydrid was not a proper agent for determining the number of hydroxyl groups of tannins, as its tendency would be to form anhydrids which in turn would be acetylised and lead to incongruous results in the analysis.

Böttinger,[17] in 1887, published an article principally on oak wood tannin, which he separated by dissolving commercial oakwood extract in twenty parts of water and allowing it to stand. The clear liquid was evaporated to dryness and boiled with acetic anhydrid, which formed an acetyl compound whose composition corresponded to formula $C_{15}H_7(C_2H_3O)_5O_9$. From this he recovered an anhydrid of oakwood tannin and formed mono- and tetra-brom derivatives of it.

In 1889, Etti,[18] adhering to his previously published formulas for oak tannins, gave the results of an investigation of a tannin from the common Slavonian oak, to which he gave the formula $C_{16}H_{14}O_9$. It was nearly or quite insoluble in water. He formed several soluble magnesium salts with this tannin and suggested that it might exist in the plant in this form, thus accounting for its solubility in an aqueous menstruum when first extracted. Several anhydrids were formed.

Any *résumé* of the literature of oak tannins, however brief, would be incomplete without reference to the work of Trimble.[19] His monograph in two volumes contains a praiseworthy compilation of previous literature on the subject and full accounts of his own work. He has the credit of introducing acetone as an extractive menstruum for the oak tannins, instead of alcohol. This solvent is said to act particularly well with oak

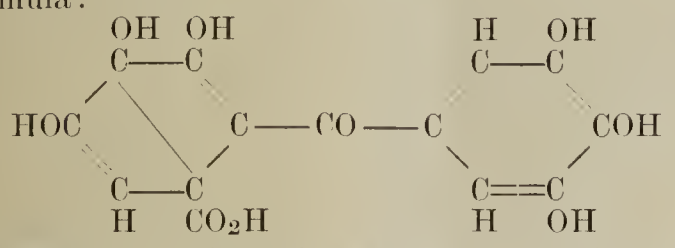
[13] C. Böttinger, 1883: Berichte, 16, p. 2710.

[14] C. Böttinger, 1884: Berichte, 17, p. 1041.
[15] C. Böttinger, 1884: Berichte, 17, p. 1123.
[16] C. Etti, 1884: Berichte, 17, p. 1820.
[17] C. Böttinger, 1887: Annalen, 238, p. 366.
[18] C. Etti, 1889: Monatsheftc, 10, p. 647.
[19] H. Trimble, 1894: "The Tannins." A monograph, J. B. Lippincott Co.

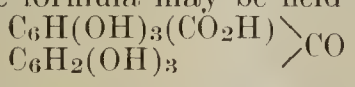
bark. A good bibliography concludes the work. He has confined himself thus far to analyses of the pure tannins and does not as yet propose formulas. In addition to the monograph just mentioned, he has been a frequent contributor on this subject in the periodical literature of chemistry.

Late Work of Schiff on Digallic Acid.

In the present year, Hugo Schiff (Gazzetta, 1897, 27, i, 90), having already found that natural tannic acid is possessed of a slight optical activity, namely dextrorotatory, inquires as to its containing in some way a symmetric carbon, and infers a ketonic structure, with six hydroxyl groups. He does not obtain a hydrazone from tannic acid. From experimental results he proposes this formula:



Irrespective of orientation, and for comparison of a kolatannin formula offered for consideration further on, the above formula may be held simply as



Caffeotannic and Caffeic Acids.

The literature of caffeotannic acid, of the formula $C_{15}H_{18}O_8$, dates from Rochleder, in 1846.[20] Its production of caffeic acid (dihydroxy phenyl acrylic acid), along with sugar, was set forth by Hlasiwetz in 1867.[21]

A few years ago, caffeic acid was obtained from the tannin of coffee, also from the tannin of the maté, by H. Kunz-Krause.[22] Very recently the same author has investigated caffeotannic acid.[23] In his report[24] he finds confirmation of the composition of caffeic acid as a dihydroxy phenyl acrylic acid. His analyses obtain the carbon dioxide given off when the caffeic acid is heated to 200° C., and are confined to this analytic method. A residue of a vinyl pyrocatechol is predicated. The author recognizes a class of bodies which he terms glucotannoids.

"FREE" KOLATANNIN.

Preparation of the Sample.

The amorphous character of tannins together with their extreme liability to decomposition, renders their separation and purification very difficult. The method used by us last year,[25] in the very brief examination of kolatannin, was based on that of Allen,[26] being fractional precipitation with lead acetate.

On taking up the work this year, it soon became evident that whatever may be said of lead acetate methods as applied to other tannins, they certainly are unsuited to this one, for various reasons. The lead kolatannate, being bulky, is extremely slow and difficult of filtration, and the tannin in this state exhibits a marked tendency to pass into insoluble forms, principally anhydrids. During the washing, the lead salt becomes gradually darker, and this tendency is favored by the moisture present. If, on the other hand, the washing be less prolonged, the resulting product will be contaminated with various other constituents of kola extract, such as sugar, alkaloids, inorganic salts, coloring matter, etc. etc. It is indeed very doubtful if any usual amount of washing will remove these impurities, hence the purity of a tannin separated by precipitation with lead acetate would be regarded with too much suspicion to be employed in analytical work, even if its sensible properties were not changed during the treatment. Kolatannin was at first supposed and since determined to be soluble in water. But on evaporating the solution of tannin after removing the lead from combination by hydrogen sulfid, the end product was a red brown substance, insoluble in water, and possessing a not particularly astringent taste. So by the use of lead acetate a tannin is obtained whose purity is a matter of doubt, and whose properties have undergone radical changes during separation, both as to color and solubility. Furthermore we desired to effect a perfect separation of the free tannin from that existing in combination with caffein (as caffein kolatannate) in order to determine by analysis, whether they were identical tannins or not, the analysis of them last year having shown somewhat different values in each for carbon and hydrogen. Caffein kolatannate is sparingly soluble in water, more soluble in solutions of tannin and of caffein, so that the aqueous infusion of kola contains caffein kolatannate as well as free tannin, and the lead tannate obtained from it would be a mixture of the lead salts of both tannins, or both forms of tannin, and no delicate separation could be had in this way.

Plainly another method was necessary. The objections just noted were for the most part neither new, nor limited to kolatannin. As previously stated, Löwe in 1872, who had encountered many difficulties in the use of lead acetate for the separation of tannins, and found it necessary to employ other means to obtain a pure product, resorted to the use of ethyl acetate. This immiscible solvent proving satisfactory in many cases has since been used considerably, either alone or mixed with ether, in the separation of tannins for analytical purposes, and for some tannins at any rate is unquestionably the best separative solvent which has yet been given publicity as such. At the same time a single shaking out with ethyl acetate does not suffice for the preparation of a pure sample. More or less coloring matter will be found in the residue left on evaporating the first portion of the solvent, so that several repetitions of the process are required. Care must be used not to carry the method of purification too far, for if this be done the decomposition of the tannin is apt to prove a greater obstacle than the original impurities. We find that four or five repetitions of the "shaking out" give the best results. In detail the manipulations are as follows, and the method has given satisfactory results:

The fresh kola nuts are sliced into boiling alcohol,[27] removed after a few moments boiling,

[20] Ann. Chem. (Liebig), 59, p. 300.
[21] Ann. Chem. (Liebig), 142, p. 220.
[22] Arch. Pharm., 1893, 231, p. 613.
[23] I am inkebted to Prof. Kremers for bringing Kunz-Krause's article in the July Berichte to my attention as I read this paper in the August meeting of Am. Phar. Association.—A. B. P.
[24] Berichte, 1897, p. 1617.
[25] Knox and Prescott, loc. cit.
[26] Allen: Com. Org. Anal. III, pt. I., p. 76.
[27] To prevent the formation of the colored body, which would otherwise appear.

and dried in a current of warm air, then ground up to a number twenty powder and packed firmly in a percolator. The alcohol so used in sterilizing the drug is diluted to about fifty percent strength, and employed as a menstruum, with addition of sufficient dilute alcohol to complete the extraction. The highly colored extract of kola thus obtained is concentrated by distillation in vacuo, until the alcohol is all removed. This can be done with a good pump at between 18° and 20° C. The contents of the flask are then filtered, the insoluble portion being chiefly caffein kolatannate, while the solution contains caffein, kolatannin, caffein kolatannate, glucose, traces of fatty matter, and more or less colored derivatives of tannin according to whether the sterilization by boiling alcohol has been properly done. Common salt is then added to this filtrate to saturation and the caffein kolatannate is completely precipitated. It is filtered out and added to the first residue of caffein kolatannate. The reddish colored filtrate is then transferred to a large separatory funnel and agitated with chloroform repeatedly to remove alkaloids and traces of fat. The dissolved chloroform is then separated by agitation with small portions of ether. Kolatannin is insoluble in chloroform, and only very sparingly soluble in ether, so this treatment does not remove any considerable amount of it. Ethyl acetate is now added to the liquid in the separatory funnel and the liquid extracted with it as long as any tannin is removed. Usually eight, ten or even more successive portions are required for this. The united solutions of tannin in ethyl acetate are transferred to a distilling flask and concentrated to dryness under reduced pressure. To avoid loss of the ethyl acetate we use a condenser about a metre in length, and pack the receiver in ice. Sometimes also a condenser is placed between the pump and the receiver. With these precautions the waste is very slight. Before using the recovered ethyl acetate as a solvent again, however, it is washed with a weak solution of sodium carbonate and redistilled, to avoid the presence of any free acetic acid formed by decomposition of the ether. The statement of Etti already alluded to, concerning the decomposition of ethyl acetate by tannin, has not been found to apply to kolatannin, but the washing was nevertheless adopted as a precautionary measure.

The tannin residue in the distilling flask is a porous, pinkish mass, very friable, and easily and completely soluble in water. It is redissolved in a convenient quantity of saturated salt solution, filtered if need be and again shaken out with ethyl acetate, which is distilled off in the way just described. The tannin residue is next dissolved in cold distilled water and shaken out as before, this process being repeated once or twice. The final tannin residue, after the ethyl acetate has been removed as far as possible by distillation, is treated in the flask with a small quantity of ether, which after thoroughly permeating the mass is removed by distillation, using only the partial force of the pump and gentle heat. This is repeated several times until the mass has no odor of ethyl acetate. Then transferring to a vacuum desiccator the tannin is kept for several days over sulfuric acid. If this does not remove the last traces of ether, gentle heat (60°–65°) will do so.

We desire to take this means of expressing our appreciation of the liberality and courtesy of the firm of Frederick Stearns & Company, Manufacturing Pharmacists, Detroit, Michigan, who supplied us with a large quantity of True African Kola nuts, for our research this year. The drug was quite fresh and in perfect preservation, very necessary conditions for work of this kind.

Properties of Kolatannin.

Kolatannin is a cream-colored powder with a slight pinkish tinge. It is freely and completely soluble in water, alcohol, acetone, ethyl acetate, sparingly soluble in ether, insoluble in chloroform and in benzin. The following tabulated comparative statement of its reactions will serve to point out some of the important differences between it and gallotannic acid, and to indicate the close resemblance between this tannin and that of oak bark.

Reactions of Tannins.

	Kolatannin. Free.	Kolatannin. From caffein kolatannate.	Oak Tannin. (Trimble).	Gallotannic Acid.
Ferric acetate.	Green.	Green.	Green.	Blue-black.
Potassium dichromate.	Dark brown ppt.	Dark brown ppt.	Brown ppt.	Brown ppt.
Chlorin.	Pale ppt.	Pale ppt.	.....	.....
Bromin.	Light yellow ppt.	Light yellow ppt.	Yellow ppt.	No ppt.
Calcium hydroxid.	Pink, then red, changing to ppt.	Pink, then red, changing to ppt.	Red, changing to ppt.	Darkens with bluish tinge, then ppt.
Tartar Emetic.	No ppt.	No ppt.	White ppt.	White ppt.
Quinin. Cinchonin. Caffein.	White ppt.	White ppt.	Ppt.	White ppt.
Albumen.	Ppt.	Ppt.	Ppt.	Ppt.
Lead acetate.	White ppt.	White ppt.	White ppt.	White ppt.
Ammoniacal potassium ferricyanide.	Deep red.	Deep red.	.....	Deep red.
Solution of formaldehyde with a condensing agent, as HCl.	Pink ppt., becoming red.	Pink ppt., becoming red.	.....	.....

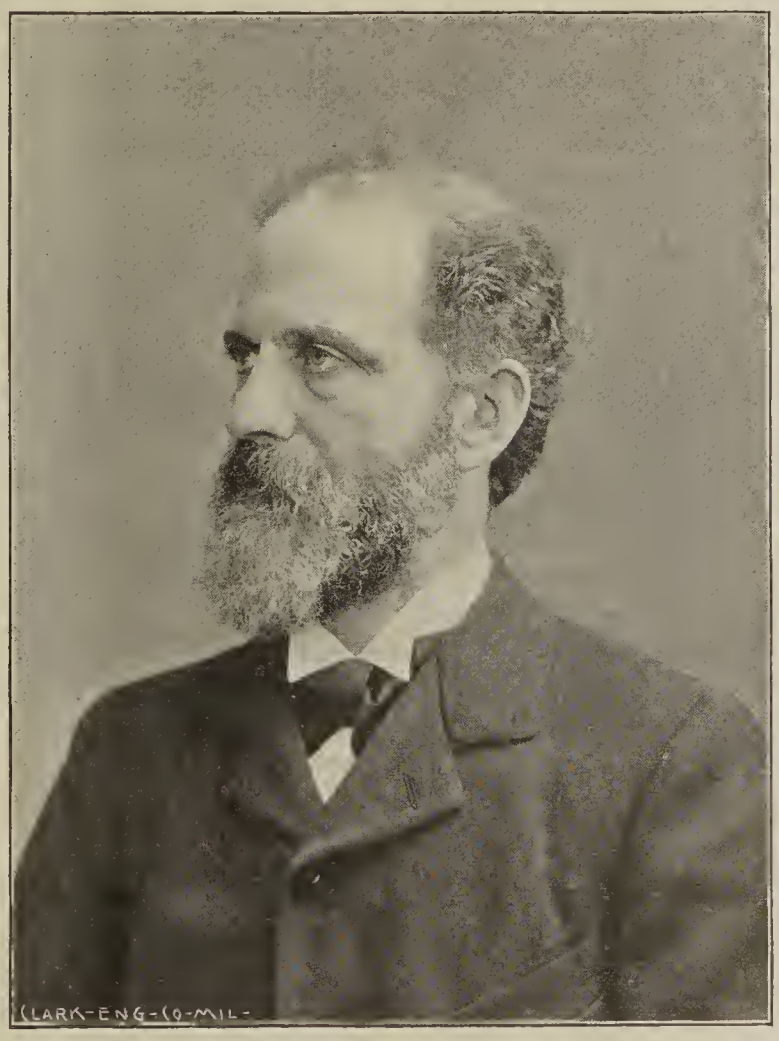
(To be continued.)

Victor Meyer.

By *H. W. Hillyer.*

The subject of this sketch was born Sept. 8, 1848, at Berlin. He studied at Berlin and Heidelberg under Bunsen and Baeyer. In 1867 he became assistant to Bunsen and was made professor of chemistry at the Polytechnic School at Stuttgart in 1871 and at the Polytechnic School at Züirich in 1872. In 1885 he was advanced to be professor at Göttingen and in 1889 was appointed successor to Bunsen in Heidelberg.

These are the main outward events in the life of Victor Meyer, one of the most successful and notable of recent chemists. His scientific career is even more full of a succession of triumphs due to his energy and skill. With a knowledge of this victorious progress we can hardly receive with credulity the news that comes, that he is dead and by his own hand.



Prof. Victor Meyer.

In a hasty review of his scientific career many things must be omitted and many things not given their proportional weight, but we can make no mistake if we try to indicate in some measure the great energy, skill and versatility which have characterized it.

Hardly a volume of that great chemical review, the Chemisches Centralblatt, can be taken up of a date later than 1869 which does not contain abstracts of from one to a dozen articles by him, ranging throughout the field of chemistry from organic to physical chemistry and from analytical to didactic chemistry, and all showing his rare energy, patience and ingenuity.

By the study of the disubstitution products of benzene, published in 1870 and 1871, he gave to the benzene theory of Kekulé one of its firm foundation stones. His studies on the nitro compounds of the fatty series were of great interest, as showing the great influence on the chemical character of a substitution product, of the position in the molecule of the group substituted.

In 1876 he is engaged in studies on the vapor densities of high boiling substances and in this connection he devised those methods and pieces of apparatus most familiar to us as elementary students; Victor Meyer's vapor density method having, for practical every day work, expelled from use every other method. While studying in so wide a field, his interest in a problem taken up seems never to have left him and we find him returning to the earlier problems in later years, as he finds new light on them or as he finds assistants best fitted to fill out the details of the main problem previously solved. So we find several articles in different years on vapor densities and finally find the main idea involved in this method employed by him for a very different purpose, the determination of high temperatures.

In 1876 we find him publishing articles on Valence, on azo-compounds, on nitro-compounds of the fatty series, on oil of turpentine and on pseudo nitrols. In 1879 he writes on furfurol in commercial glacial acetic acid and on the vapor densities of inorganic compounds. By the last mentioned research and others in the same line he shows the dissociation of the halogens at a high temperature and proves that quite a number of metals have at a high temperature but one atom in the molecule.

Some observations made by him at Züirich in 1882 led to one of his most characteristic researches. He noticed that benzene from benzoic acid, when shaken with isatine and sulphuric acid, failed to yield the indopherin reaction, differing in this respect only from the ordinary benzene from coal tar. It had been supposed that the reaction took place between the isatine and the benzene, but here pure benzene from one source gave the reaction and benzene from another source and supposed to be pure did not give the reaction. Was there in either sample an impurity which caused the union to take place between the benzene and the isatine? or was there in coal tar benzene a substance of properties so similar to those of benzene that its presence had not been suspected and did this react with the isatine to give the color? By shaking the coal tar benzene with cold sulphuric acid, he extracted from it a substance unsuspected before and by research found a means of isolating it in pure form. It was an organic sulphur compound with physical and chemical properties strangely similar to those of the hydrocarbon benzene. By investigating its properties and making its derivatives he established its constitution and gave to the chemical world an entirely new series of compounds which he called the thiophene series.

In later years he was largely engaged in the study of slow combustion, especially in determining whether or not there is any definite temperature below which oxygen will not unite with hydrogen or carbon monoxide. In this work he shows his wonderful patience and power of overcoming dif-

ficulties. He was also engaged in investigating the iodo and iodoso compounds and in work on organic nitrogen derivatives with a view of explaining certain peculiar isomerisms and of supporting his theories in regard to the stereochemistry of nitrogen.

The latest line of research, on which he has published papers, is on the influence of the position of substituted groups on the ease with which the acids derived from benzene from esters. The interesting result is reached that many groups in ortho position to the carboxyl absolutely prohibit the formation of esters by the action of alcohol and hydrochloric acid.

Among the researches mentioned there are several which may be called classical and which would deserve to yield renown to any chemist. They are full of insight, ingenuity and force, they are suggestive and satisfying, and as we think of the vitality displayed in them, we again find ourselves incredulous when we hear that he is gone.

Quite recently, according to the Heidelberg correspondent of the Pharmaceutische Zeitung, it had been observed by those about him that Professor Meyer's mood had changed, that he was irritable and nervous. He was troubled by insomnia and inability to throw off the cares of his work. He had also been under treatment for nervousness. It is therefore probable that his great suffering led to his death and not any domestic trouble, as has been reported by the papers. He left no letters, but in his last lines written he took most affectionate leave of his wife and children.

MONTHLY REVIEW.

Annual Reports.

A Resume of Progress in the Chemistry of the Carbohydrates during 1896.*

By *W. E. Stone.*

The effect of basic lead acetate upon sugar solutions has been carefully studied, and a number of important conclusions drawn, mostly of technical application: among these, that the presence of basic lead acetate affects the rotation of sugar solutions, through the formation of lead compounds. In the presence of baryta, strontia, or lime, lead saccharates are precipitated; magnesia is also efficient in this respect. Raffinose[1] is thrown down from aqueous solutions by very basic lead acetate.

In an address on the origin of sugar in the beet, F. Strohmer reviews in an interesting manner the physiology of the sugar-beet. The total amount of water and sugar present during the latter half of the growth of the beet is practically constant; the sugar is prepared in the leaf and its amount depends on the vigor and extent of this part of the plant. When removed from the earth, the beet steadily loses sugar by the process of transpiration.[2] Sucrose is said to be formed from the starch in potatoes by freezing (see Starch).

A new method for recovering sucrose from beet-molasses has been patented by G. Kassner.[3] After treatment with lime or basic acetate of lead, the filtered solution is slightly warmed and treated with a thin paste of lead oxide or hydroxide, which precipitates the sucrose as a lead compound. One molecule of sugar requires somewhat more than two molecules of lead oxide, PbO. The lead saccharate is sufficiently insoluble to permit of washing, and is afterwards decomposed by carbon dioxide. The lead carbonate is recovered by ignition. Criticisms of this process both pro and con, have been published.[4] It does not appear that with proper manipulation there is danger of any lead compounds remaining in the crystallized sugar.

Another patent relating to the same process involves treatment of the molasses with alkali or calcium sulphite and sulphur dioxide, and heating to boiling under pressure.[5]

Amorphous Carbohydrates.

Cellulose.—The valuable researches of Cross and Bevan and their associates upon the constitution of the celluloses is still progressing and with notable results. Reports from these authors during the past year have reference mainly to the cellulose of cereal straws. By dissolving bleached straw-cellulose in concentrated sulphuric acid, and then diluting with water, a precipitate was obtained which was practically free from substances yielding furfurol; the soluble portion retained practically all of such materials originally present in the straw. On neutralizing this solution with barium carbonate, a portion of these materials was thrown down, but the solution still reduced Fehling's solution strongly; the osazone derived from it melted at 154°; analysis indicated a substance with C_{16} to C_{18}; by oxidation acetic acid was produced, and there was evidence of the presence of hydroxyl groups capable of acetylization. The cereal straws are made up of the following constituents: Ligno-celluloses, 33 percent; resistant celluloses, 25 percent; hemi-celluloses, 21 percent; pentosans, 21 percent.[6]

An attempt to trace the development of the various celluloses and related substances in the growing plant (barley) has given interesting results.[7] Substances yielding furfurol were found in both the soluble and the permanent tissue, but these are localized in the cell-substances, and are generally changed into permanent tissue. In the growing plant the "furfuroids" are separated from the cellulose by 1 percent sulphuric acid at a pressure of three atmospheres. In the early stages of growth the "osazones" melt at 180°—190°, i. e., are not pentose compounds. Up to the flowering period the products of hydrolysis are fermentable, and do not yield carbon dioxide when oxidized with hydrogen peroxide. From the flowering period on there is no constant increase of the pentosan-formal complex.

From the mature straw the portion separable by sulphuric acid has the empirical formula $C_6H_{10}O_5$, and probably the constitution of a pentosan-formal,

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* Continued from p. 157.

1 H. Suoboda: Zeitschr. Ver. Rübenzuck.-Ind., 1896, p. 107.

2 F. Strohmer: Oesterr.-Ung. Zucker-Ind. u. Landw., 25, p. 589.

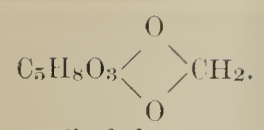
3 G. Kassner: Ibid., 25, p. 800.

4 See A. Wohl: Ztschr. Ver. Rübenzuck.-Ind., 1896, p. 159; "C. W.," Dingler's Pol. J., 301, p. 46; G. Kassner: Ibid., 301, p. 215; Pharm. Cent. H., 37, p. 4.

5 K. Kastengren, Boehm: Ztschr. f. Zuck.-Ind., 20, 279.

6 Cross, Bevan and Beadle: J. Am. Chem. Soc., 18, p. 16.

7 Ibid., p. 8; Cross and C. Smith: Chem. News, 74, p. 175; Ber. d. chem. Ges., 29, p. 1457.



It yields the "osazones" of the pentoses after hydrolysis, is characteristically decomposed with formation of carbon dioxide, and the product of hydrolysis is partially fermentable. The authors regard the furfurol-yielding substances as direct products of assimilation.

Former experiments upon the rise in temperature of cellulose through the absorption of atmospheric moisture[8] have been continued, the results indicating that "viscoid," a form of cellulose precipitated from solutions in alkali and carbon disulphide, behaves in this respect like finely divided cotton.[9]

Experiments upon the saccharification of sulphite-cellulose and sawdust, for the purpose of producing alcohol[10] by the fermentation of the product, showed that 0.4 to 0.6 percent sulphuric acid acting at eight atmospheres pressure during two hours produce 45 percent of sugar from sulphite-cellulose. 0.5 percent sulphuric acid at nine atmospheres pressure during one-fourth hour produced 22.5 percent sugar from sawdust. From 100 parts of sawdust, 6.5 parts of pure alcohol were obtained. A tetranitrocellulose of marked explosive properties has been prepared by the action of nitric acid on dinitrocellulose in the presence of strong dehydrating substances like sulphuric acid and phosphorus pentoxide.[11]

Certain cellulose derivatives give promise of such industrial value as to warrant the securing of patents by their originators. Cross and Bevan have patented in England and Germany a process for preparing cellulose tetracetate by heating dehydrated cellulose and zinc acetate with acetyl chloride. The product is solid, but dissolves in chloroform and resembles collodion without possessing its explosive character.

Chardonnet and Lehner have patented in Germany a method of making an imitation of silk ("Glanz-cellulose"). A description[12] states that the glistening appearance is due to the fact that the fibres are solid. It is produced by nitrating cellulose, dissolving in alcohol and ether, passing the viscous mass through fine holes, and allowing the solvent to evaporate; the fine threads are spun to yarn, and denitrated by ammonium sulphide, after which it is no longer explosive or combustible. The silk is more hygroscopic than ordinary cellulose, and less elastic, and only 70 percent as strong as silk.

An oil- and water-proof paper has been patented by E. Schering. It is prepared by saturating hydrocellulose (parchment paper) with pyroxylin.

The hemicellulose of the thickened cotyledons of seeds of lupine previously shown to yield galactose and a pentose on hydrolysis, has been studied during the process of germination and is found to be largely absorbed. It undoubtedly serves as a reserve material in the seed.[13]

Analysis of xylan carefully prepared from corn-cobs and dried by a special method, shows its composition to be represented by the formula $C_5H_8O_4$. A similar preparation from birchwood gave the formula $C_4H_6O_3$. It is suggested that this is a tetrosan and further study is reserved. Mannan from vegetable ivory has a composition represented by $C_6H_{10}O_5$.[14]

Starch.—A study of the progressive hydrolysis of starch by acids, controlled by frequent determination of rotation and reducing-power, shows a constant relation between these two properties at all stages of hydrolysis.[15] The conclusion is drawn that in any acid converted starch product the specific rotation represents a definite composition, and in such a product but three simple carbohydrates exist. The speed of hydrolysis follows about the same law as sucrose.

The starch of potatoes which have been frozen or kept for some time at a temperature near the freezing-point, is changed to sugar (sucrose and dextrose). If such potatoes are returned to ordinary temperature, in time some of the sugar disappears in the process of transpiration, and a large portion (about 62 percent) is changed back to starch.[16]

Starch paste is changed by chloroform into modifications similar to those produced by the action of acids. A solution of starch in contact with chloroform for three months no longer gave the usual reaction with iodine. By evaporating the solution and precipitating with alcohol, dextrins of varying solubility were obtained.[17]

Iodine and starch form a chemical compound, e. g., starch is able to withdraw iodine from other compounds, forming iodide of starch. From the latter compound the iodine is separated by dialysis in the form of hydriodic acid.[18]

Starch exposed to a solution of chloral swells up to a nearly clear, viscous solution. After filtration such a solution gives no color reaction with solid iodine: if water be added to this solution, a blue color appears at the zone of contact with the iodine. These and other reactions show a restrictive influence of chloral on the formation of the starch-iodine compound.[19]

The isomaltose of Lintner and Düll, and others, is still regarded as of doubtful existence. Among the products of diastatic action upon starch, isomaltose is said to be formed. It is pointed out that different dextrins result, of which the so-called No. III resembles maltose, but is not easily fermented by yeast of the Saaz or Frohberg types, these properties being characteristic of isomaltose. If, however, the experiments be made *in vacuo*, this product is readily fermentable. This is explained on the principles of osmosis, fermentability being dependent upon the diffusibility of the substance through the cell-membrane. Moreover, this dextrin III, if mixed with about 20 percent of maltose, gives an "osazon" like that described for isomaltose. The author regards isomaltose as a mixture of maltose and certain dextrins.[20]

Isomaltose may be prepared by the action of sulphuric acid on dextrose at ordinary temperature for some months. By precipitation with alcohol and ether,

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[8] Chem. News, 71, p. 1.
[9] C. Beadle and O. Dahl: Chem. News, 73, p. 180.
[10] E. Simonson: Norsk. tekniks. Tidskrift, 1895, p. 65.
[11] H. N. Warren: Chem. News, 74, p. 239.
[12] Cross and Bevan: J. Soc. Chem. Ind., 15, p. 317.
[13] E. Schultze: Ztschr. phys. Chem., 21, p. 392.
[14] S. W. Johnson: J. Am. Chem. Soc., 18, p. 214.
[15] G. Rolfe and G. Defren: Ibid., 18, p. 869.
[16] W. Bersch: Oesterr.-Ung. Ztschr. Zuck.-Ind. u. Landw., 25, p. 766.
[17] F. Musset: Pharm. Centr. H., 37, p. 587.
[18] Ibid., 37, p. 556.
[19] E. Schaer: Pharm. Centr. H., 37, p. 540.
[20] E. Prior: Centr. Bl. f. Bakt. u. Parasitenkund., 2, p. 271; also Forsch: Ber. ub. Lebensm. u. Bez. Z. Hyg., 3, p. 322.

about 27 percent of the original sugar was obtained as a product of a specific rotation of +70° and a reducing-power two-thirds that of dextrose. In a similar way maltose may be condensed to isomaltose.[21]

Action of Ferments.

The action of animal secretions on the polysaccharides has been studied under a wide range of conditions and with many different materials, including blood serum and infusions from various glands and organs of different warm- and cold-blooded animals. In all cases starch, glycogen and maltose were changed to dextrose. Lactose was not changed by blood serum nor was sucrose. In general, the latter was but little affected. Trehalose was slightly changed in some cases, in others not. Raffinose was unchanged by either blood serum or intestinal juices; α-methyl-glucoside was unchanged, but methyl-glucoside was decomposed by an infusion of the intestinal membranes of the horse. Amygdalin was unchanged by the intestinal infusion of ruminants, but speedily decomposed by that of other mammals.[22]

Experiments indicate that a sugar not fermentable by a certain organism is still unfermentable when mixed with a second fermentable sugar.[23]

By extracting cultures of *aspergillus niger* with water, a soluble ferment is obtained which produces very complete hydrolysis of raffinose, the rotation diminishing from 103° to 50°. An infusion of baker's yeast gave similar results.[24]

Brown and Morris have called attention to an enzyme (cystase), which dissolves cellulose, but is rendered inactive at 60°.

Other enzymes are thought to exist, which are able to hydrolyze the hemicelluloses, such as arabo-xylan, galacto-araban, etc., but at temperatures below 60°.[25]

A saturated solution of gypsum seems to retard diastatic action temporarily, but, later, saccharification is increased.[26]

Chemistry.

Sodium ossalinate.

This is the name given to the sodium salt of the fatty acid produced from beef-marrow. According to the manufacturer, J. E. Stroschein, it is intended as a substitute for cod-liver oil.

[Ph. Ztg., 1897, p. 354.]

Bromalbumin.

Under the name of "Bromosin" this compound has come into use since 1895, and in reference to it Professor O. Loew states that after removing loosely adherent bromine there remains 16.16 per cent. in a more intimate state of combination. After solution in ammonia and precipitating, there remains 13.10 per cent. bromine. On boiling bromalbumin with alkali, sulphur is not abstracted as in the case of ordinary albumin, and no tyrosin is formed by treatment with mineral acids. Millon's reagent does not produce a red coloration on boiling, though the biuret reaction takes place distinctly. Albumin which has been subjected to partial oxidation by treatment with potassium permanganate behaves in a similar manner, so that the groups affected by bromine are probably the same as those affected by incipient oxidation.

[Chemiker Zeitung, 1897, p. 264.]

Caffeotannic Acid.

In 1867 Hlasiwetz showed that caffeotannic acid upon hydrolysis yielded an uncrystallizable sugar and a then unknown acid which he called caffeic acid and which proved to be dioxycinnamic acid, $C_6H_3(OH)_2.CH:CH.COOH$. Later (1884) A. W. v. Hofmann isolated the same acid from the motherliquids resulting in the preparation of coniine. Several years ago H. Kunz-Krause obtained the same acid from the maté-tannic acid upon hydrolysis of the latter according to Hlasiwetz's method, thus demonstrating the identity of both so-called tannic acids. For this group of glucosoid compounds the author suggested the group name glycotannoids. He now points out that the melting point of caffeotannic acid given by Hofmann, viz. 213°, is not its melting point, but its decomposition point. Like the other aromatic hydroxy acids it gives off its carboxyl carbonatom as carbonic acid at 200°. As second decomposition product vinylpyrocatechol (m-p dioxystyrol): $C_6H_3(OH)_2.CH:CH_2$ 1:3:4 (.CH:CH$_2$ in 1), which was unknown heretofore, results. This vinylpyrocatechol, however, does not distill without decomposition even in vacuum, but breaks up quantitatively into pyrocatechol.

[Berichte, 30, p. 1617.]

On the Action of the Galvanic Current on Several Alkaloids.

E. Schmidt and H. Pommerehne have examined the action of the electric current on dilute acid solutions of several alkaloids. Caffeine yielded amalinic acid, formic acid, ammonia and methylamine. The primary reaction is expressed by the following equation:

$$\underbrace{2C_8H_{10}N_4O_2}_{\text{Caffeine}} + 5H_2O + 3O = \underbrace{C_{12}H_{14}N_4O_6}_{\text{Amalinic Ac.}} + 2NH_3 + 2NH_2.CH_3 + 2CO_2.$$

Inasmuch as no CO_2 was eliberated, it is supposed that this was secondarily reduced by the nascent hydrogen to formic acid.

From an acid solution of morphine after similar treatment only oxydimorphine has been obtained thus far.

A like solution of quinine yielded only a green resinous substance resembling thalleiochine.

[Arch. f. Pharm. 235, p. 364.]

The Alkaloids of the Lupines.

Prof. E. Schmidt and his pupils continue their interesting reports on the alkaloids obtained from these forage and decorative garden plants. (See this journal, p. 138.) The names of the authors, the titles of the several articles and only a few of the quantitative results can be mentioned here. For the detailed study of the alkaloids and their salts the originals will have to be consulted.

[21] H. Ost: Chem. Ztg., 20, p. 761.
[22] E. Fischer: Sitzungs-Ber. Kgl. Preuss. Akad. d. Wiss., Jan., 1896; also E. Bourquelot and E. Gley: Compt. Rend. Soc. Biol., 1895, p. 555.
[23] Van Laer: Bull. Assoc. belge. Chimistes, 9, p. 319.
[24] E. Bourquelot: J. Pharm. Chim. (6), 3, p. 390.
[25] J. Grüss: Wchschr. Brauerei, 1895, p. 1257.
[26] J. Grüss: Berl. Pharm. Ges., 5, p. 258.

L. Berend: — Ueber das Lupinin und das Lupinidin der gelben Lupine, p. 262.

K. Gerhard: — Ueber die Alkaloide der schwarzen Lupine, p. 342.

K. Gerhard: — Ueber die Alkaloide der perennirenden Lupine, *Lupinus polyphyllus*, p. 355.

K. Gerhard: — Notiz über die Alkaloide der Samen von *L. affinis*, *L. albo-coccineus*, *L. Cruikshanksi*, *L. Moritzianus*, *L. mutabilis*, *L. pubescens*, p. 363.

The assay according to Keller's method yielded the following results:

The quantity of alkaloids obtained from 100.0 seeds required for neutralization, $\frac{N}{10}$ sulphuric acid being used:

Yellow lupine	18.12 ccm.	= 0.4493 p.c.	= 0.6378 p.c.
Blue lupine	29.23 "	= 0.7249 "	= — "
White lupine	44.82 "	= 1.1115 "	= — "
Perennial lupine	47.70 "	= 1.1829 "	= — "
Black lupine	24.60 "	= 0.6100 "	= 0.8659 "

Inasmuch as it was ascertained later that the black lupine contains a third alkaloid, lupinidine, $C_8H_{15}N$, the amount of which could not be definitely determined, the assay of this variety has but a relative value.

An assay of the varieties mentioned in the third paper was made according to the same method. The amount of acid ($\frac{N}{10}H_2SO_4$) for the alkaloids from 10.0 of seed was ascertained. The percentage calculated is that for lupanine.

L. affinis	22.3 ccm.	= 0.55304 p. c.
L. albo-coccineus	34.9 "	= 0.86552 "
L. Cruikshanksi	53.6 "	= 1.32928 "
L. Moritzianus	31.8 "	= 0.78864 "
L. mutabilis	47.4 "	= 1.17552 "
L. pubescens	52.9 "	= 1.31392 "

What the exact nature of the alkaloids in these varieties is has not yet been ascertained.

A. Soldaini, who had also begun the study of the alkaloids of *Lupinus albus*, reports (p. 368) on the results of his investigations which accord largely with those of E. Schmidt and his pupils. He describes several of the alkaloids and their salts and also comments somewhat on the chemical structure of their molecules, without, however, assigning any definite structural formulæ. He also mentions briefly the physiological and therapeutic investigations on the part of Profs. Gabbi and Gaglio; also the study of the action of mould on these alkaloids by Prof. Eerni. Further publications from all of these sources are to be expected.

[Arch. f. Pharm. 235, pp. 262, 342 & 368.]

The Distribution of Alkaloids.*

Rutaceæ. a) *Ruteæ.*

Angusturine, $C_{10}H_{10}NO_{14}$ (?), Cusparia trifoliata Engler (Galipea officin. Hancock).
Evodine, $C_6H_{18}NO_6$ (?), "
Cusparine, $C_{20}H_{19}NO_3$, "
Cusparidine, $C_{19}H_{17}NO_3$, "
Galipeïne, $C_{20}H_{21}NO_3$, "
Galipidine, $C_{19}H_{19}NO_3$, "
Harmaline, $C_{13}H_{14}N_2O$, Peganum Harmala.
Harmine, $C_{13}H_{12}N_2O$, " "
Pilocarpine, $C_{11}H_{16}N_2O_2$, Pilocarpus pennatifolius.
Pilocarpidine, $C_{10}H_{14}N_2O_2$, Pilocarpus pennatifolius.
Jaborine, $C_{22}H_{32}N_4O_4$, " "

b) *Xanthoxyleæ.*

Artarine, $C_{21}H_{23}NO_1$ (?), Xanthoxylon senegalense.
Berberine, $C_{20}H_{17}NO_4$, " caribæum.
Xanthoxyline, —, " carolinianum.

Sarraceniaceæ.

Sarracenine, —, Sarracenia purpurea.

Simarubaceæ.

Pereirine, —, Picramnia ciliata Mart.
Picramnine, —, Cascara amara.

Solanaceæ.

Atropine, $C_{17}H_{23}NO_3$, Atropa Belladonna, Datura Stamonium.
Atropamine, $C_{17}H_{21}NO_2$, Atropa Belladonna.
Belladonnine, $C_{17}H_{21}NO_2$ (?), "
Oxytropine (?), $C_8H_{15}NO_2$, "
Pseudotropine, $C_8H_{15}NO$, "
Betaïne, $C_5H_{15}NO_3$, Lycium barbarum.
Capsicine, —, Capsicum annuum.
Choline, $C_5H_{15}NO_2$, Atropa Belladonna, Hyoscyamus niger, Fabiana imbricata, etc.
Grandiflorine, —, Solanum grandiflorum, var. pulverul.
Hyoscyamine, $C_{17}H_{23}NO_3$, Atropa Belladonna, Datura stramonium and Hyoscyamus niger.
Mandragorine, $C_{17}H_{23}NO_3$, Mandragora officinalis.
Nicotine, $C_{10}H_{14}N_2$, Nicotiana tabacum.
Nicotianine, $C_{23}H_{32}N_2O_3$ (?), " "
Scopolamine, $C_{17}H_{21}NO_4$, Scopolia atropoides, Duboisia myoporoides, Atropa Belladonna, Datura Stramonium.
Somniferine, —, Withalia somnifera.
Solanine, $C_{43}H_{71}NO_{16}$ (?), Solanum tuberosum, S. ferox, S. nigrum.
Solaneïne, $C_{52}H_{83}NO_{13}$ (?), Solanum tuberosum.

Sterculiaceæ.

Theobromine, $C_7H_8N_4O_2$, Theobroma Cacao.

Styracaceæ.

Loturine, —, Symplocos racemosa Roxb.
Colloturine, —, " "
Loturidine, —, " "

Ternstrœmiaceæ (*Camelliaceæ*).

Caffeïne, $C_8H_{10}N_4O_2$, Thea chinensis.
Theophylline, $C_7H_8N_4O_2$, " "

Umbelliferæ.

Chærophylline, —, Chærophyllum bulbosum.
Cicutine, — Cicuta virosa.
Coniine, $C_8H_{17}N$, Conium maculatum.
Methylconiine, $C_8H_{16}(CH_3)N$ " "
Conhydrine, $C_8H_{17}NO$, " "
Pseudoconhydrine, $C_8H_{17}NO$, " "
Cynapine, —, Aethusa Cynapium.
Oenanthine, —, Oenanthe fistulosa.
Pastinacine, —, Pastinaca sativa.

Urtiaceæ. a) *Urticeæ.*

Unknown, —, Urtica urens and U. dioeca.

b) *Cannabineæ.*

Cannabinine, —, Cannabis indica and C. sativa.
Hop-alkaloids, —, Humulus Lupulus.

Verbenaceæ.

Viticine, —, Vitex Agnus castus.
Castine, —, " " "

Violaceæ.

Anchietine, —, Anchietea salubris.
Violine, —, Viola odorata.

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* Continued from p. 160.

The Present State of the Scopolamine-Hoscine Question.

In a paper presented by Dr. Louis Merck to the New York section of the Society of Chemical Industry, the author presents the question as it now stands. In speaking of the socalled amorphous "hyoscyamine", the mixture of bases obtained from hyoseyamus seed, the author said that Ladenburg had first isolated from it a principle which he named hyoscine. Ladenburg considered this base to be an isomer of atropine and hyoscyamine and assigned to it the formula $C_{17}H_{23}NO_3$. Hesse on the other hand claimed this base to have the composition $C_{17}H_{21}NO_4$ and to be identical with that isolated from Scopolia atropoides by E. Schmidt and named scopolamine. Later E. Schmidt found that commercial hydrobromate of hyoscine consisted almost entirely of scopolamine hydrobromate, although he does not on this account claim the nonexistence of a hyoscine of the formula $C_{17}H_{23}NO_3$, but is rather of the opinion, that a base of this composition might be found in the mixture of alkaloids obtained from the Solanaceae and that Ladenburg really obtained this base in the course of his investigation.

According to Dr. Merck the hyoscine put on the market by E. Merck is in all respects identical with scopolamine, and it is only to prevent mistakes in commercial circles that this firm has designated in its lists the alkaloid from hyoseyamus as "hyoscine" and that from Scopolia atropoides as "scopolamine".

Since the beginning of this question the firm of E. Merck, which uses large quantities of drugs of the Solanaceae for the production of alkaloids, has continually made efforts to isolate a base of the composition $C_{17}H_{23}NO_3$, and which posseses the properties of hyoscine, but without success. They obtained from Duboisia myoporoides a base $C_{17}H_{23}NO_3$, the properties of which are however quite different from those of hyoscine, the former is, for instance, a crystalline compound melting at 132°—134°, whereas the latter is an oily fluid. This base from Duboisia myoporoides they claim to be isomeric with atropine and hyoseyamine and called it "pseudo-hyoscyamine".

Even by investigating large quantities of the alkaloidal residues obtained in the manufacture of atropine they have not been successful in isolating a base comparable with hyoscine of the formula $C_{17}H_{23}NO_3$. Repeated attempts were made to isolate all the alkaloids from Duboisia. The bases obtained were hyoseyamine, hyoscine (=scopolamine) $C_{17}H_{23}NO_3$, speudohyoscyamine, and considerable quantities of amorphous bases. Never was a base found which corresponded to the formula and properties of the hyoscine of Ladenburg, nor have they been able to find hyoscine (=scopolamine) in hyoseyamus seed and scopolia root. Dr. Merck questions very much whether it be indeed possible to isolate the hyoscine of Ladenburg from any of the known Solanaceae, and therefore considers the present question simply as a controversy between O. Hesse and E. Schmidt as to whether the alkaloid $C_{17}H_{21}NO_4$, should be called scopolamine or hyoscine.

Calcium carbide and Melting and Distillation of Metals.

Joh. Pfleger of Frankfort gave a detailed report of the calcium carbide industry at the fourth annual meeting of the German Electrochemical Society, held at München. He pointed out that only since the production of calcium carbide the varied uses of electrical heating had been recognized, and to such an extent that at present we may speak of a chemistry of the arc lamp. Up to the present time Moissan has been almost exclusively the only investigator along this line and the German scientific institutions have scarcely furnished a single report of an investigation. This is evidently due to the fact that the German laboratories have not the facilities of obtaining the large currents that Moissan employs. After a critical account of the various attempts to increase the production of the carbide furnaces, the speaker said that perhaps the only point in which the structure of the furnace might be modified so as to give a greater yield, consisted in warming the raw material by the use of the large quantities of carbon monoxide which escape in the process. The quantity of this gas given off is very large; two tons of carbide give nearly one ton of carbon monoxide. The speaker then said that Spain was particularly well adapted for carbide factories on account of its many waterfalls, which can be utilized to furnish the enormous amount of energy necessary in the manufacture. The lecturer has inspected several places in the Pyrenees with this object in view and pointed out that the limestone obtainable in the neighborhood would tend to decrease the cost of production. A factory is to be built on the Ebro with a production of 30,000 tons annually. As to the consumption of these enormous quantities of calcium carbide there is in Spain, besides the uses for lighting purposes, also that of annihilation of the lice infecting the grape vines.

The operating of a calcium carbide factory is exceedingly simple. Coke and lime are ground, the coke somewhat finer than the lime and these two mixed in such proportion that the theoretical quantity of calcium oxide is present. This mixture is then fed continually to the furnace. It has been claimed that the lime melts at the temperature of formation of calcium carbide and that it is for this reason that the lime can be used much coarser than the coke. The speaker has found that lime does not melt under the same conditions that the carbide formation takes place, but he has noticed that quite an appreciable quantity is volatilized and deposited as a very soft sublimate. He is therefore inclined to ascribe some part in the formation of carbide to this fact.

The lecturer then showed a furnace for the distillation of metals of high melting points. The furnace is closed and provided with a gas vent, and offers the possibility of a more exact study of the process of reaction in the arc lamp. In order to study the reaction of gases on solids he uses a carbon tube, through which the gas is admitted, as upper pole. In this manner he has distilled several metals in a current of hydrogen. There are formed during this process bad smelling vapors which are probably hydrides of the metals. By conducting chlorine through the hollow carbon it is possible to make readily the chlorides of metals which are otherwise formed only with difficulty. Even carbon appears to react with chlorine at the temperature of the arc lamp. He suggests that by using hydrochloric acid gas it might be possible to get halogen derivatives of hydrocarbons.

Carpaïne.

J. J. L. van Rijn, who published his first observations on this subject in 1893 (Arch. f. Pharm., p. 184), has recently made another interesting report. The carpaïne examined was partly obtained from E. Merck, partly from 500 kg. of dried leaves of *Carica Papaya* L. obtained from India.

The author states that according to Bretschneider this tree was brought to China and the East Indies by the Spanish and Portugese after the discovery of America. The Sinologi, who claim that the papaya tree was previously indigenous to China and known under the name of tree-melon (Mu kua), according to the same authority confuse *Carica Papaya* with *Cydonia Sinensis*.

The physiological action of carpeïne on the heart, according to C. L. Ruemke, differs materially from that of digitalis. It acts paralysing, but apparently directly on the heart muscle without affecting the nerves. Of a cumulative effect nothing definite is known.

It is of interest to note that the natives have learned to deprive the infusion of the leaves of its bitter taste by boiling it with a certain shale. Whereas Vorderman is of the opinion that this is due to a decomposition of the carpaïne, van Rijn holds that the carpaïne is only mechanically removed.

To substantiate the formula of the author, $C_{14}H_{25}NO_2$, analyses by Dr. Greshoff made in the Buitenzorg laboratory in 1891 are published. Methyl carpaïne forms small colorless prisms melting at 71°. A platinum salt was analysed. The action of benzoylchloride on carpaïne, methyl carpaïne and nitroso-carpaïne was studied. A new substance was obtained and more definite data may be expected later. The same is to be said about the products of hydrolysis of the carpaïne and of its oxydation with acid permanganate.

A crystallographic description of carpaïne and some of its salts by Prof. A. Wichmann is also given.

Besides the carpaïne a glucoside, carposid, was obtained by precipitating it with basic lead acetate from the aqueous solution from which the carpaïne had been removed by extraction with ether. This glucoside, however, has no saponin-like characteristics and the author is of the opinion with Greshoff that no such substance occurs in the leaves.

[Arch. f. Pharm. 235, p. 232.]

Cytisine.

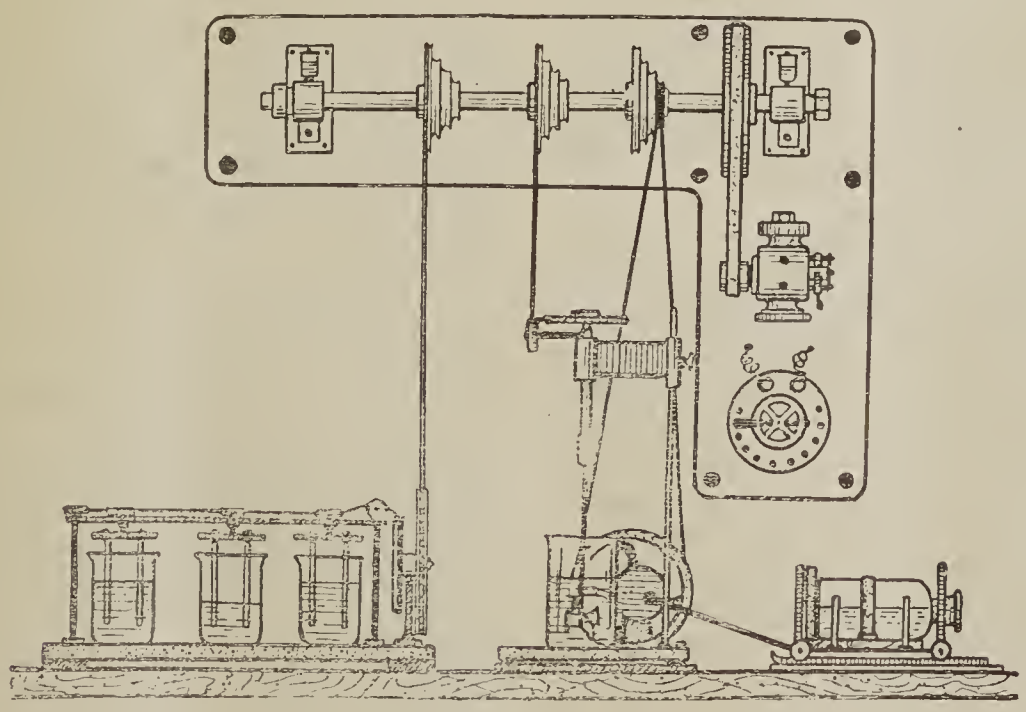
This alkaloid has of late years been examined by a number of chemists and has been shown to be identical with ulexine, $C_{11}H_{14}N_2O$ obtained from the seed of *Ulex europæus*. As to its constitution it has thus far been shown that one of the nitrogen atoms is in form of an imido, NH, group, and that it is somehow related to pyridine.

J. Lammers has undertaken the study of the halogen derivatives of cytisine with the hope of learning more about the constitution of this alkaloid. Although a large number of new compounds were prepared, they have thrown no new light on this question. It had been supposed by Partheil that cytisine is related to nicotine. Lammers, however, shows that the halogen derivatives are much more stable than those of the latter. [Arch. f. Pharm. 235, p. 374.]

Pharmaceutical Technique.

Shaking and Stirring Apparatus.

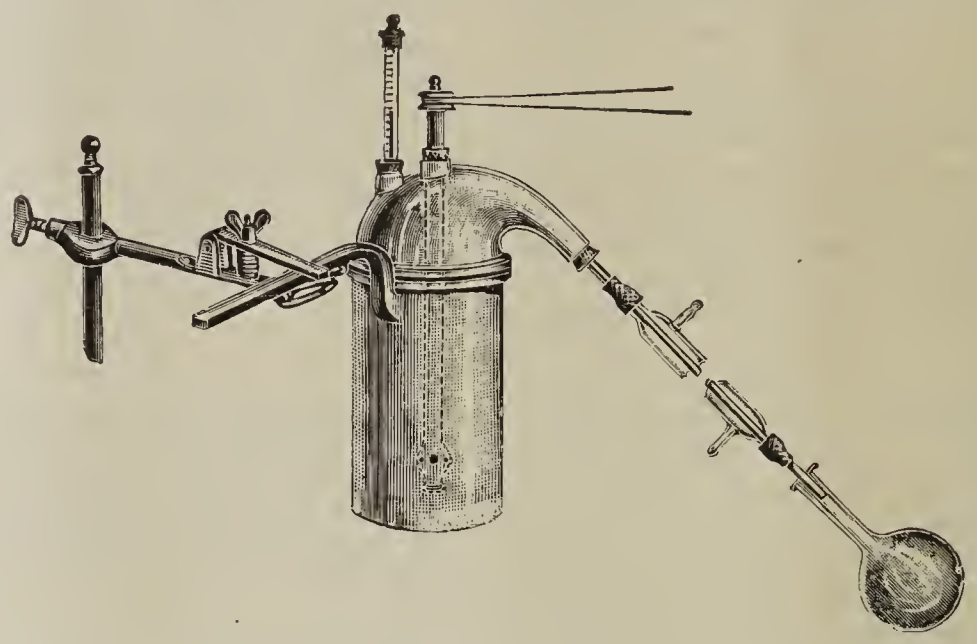
The accompanying cut illustrates a new shaking and stirring apparatus, put on the market by Max Kaehler and Martini, Berlin. The power is furnished by a small electric motor capable of developing 1/12 horse power, when working on a circuit of 65—110 volts and with a current of 1.2—2 amperes. Attached to the same wall-board with the motor are a resistance



box and the hanger with self-oiling bearings, in which the shaft runs. Three cone pulleys fastened to the shaft allow the stirring and shaking apparatus connected with them to be run at variable speed.

Combination Melting, Distilling, and Subliming Apparatus.

This new apparatus, shown in the accompanying figure, was devised by Dr. L. Paul and can be obtained through M. Kaehler and Martini, Berlin.



The material of which the apparatus is made is highly resistant "Sanitäts" porcelain. The advantages claimed for it are as follows: The handle at the side permits easy manipulation and also allows the apparatus to be clamped to an ordinary stand. The doubly tubulated head can be employed for introducing a thermometer and stirring apparatus, as shown in the figure, or the openings can be used for distilling with a current of air, in case of sublimation or distillation of substances of high melting point. After the operation is completed, the head, which is fastened on to the body by means of clamps, can be removed, and the apparatus readily cleaned.

Botany and Pharmacognosy.

Hydrocyanic Acid in Pomaceous Seeds.

Kobert*) mentions but one plant of the *Pomaceæ* of which the seeds contain emulsin and amygdalin. M. L. Lutz has studied the seeds of a number of members of this group with reference to these constituents and finds both substances in the seeds of *Malus communis, Cydonia vulgaris, C. Japonica, Sorbus Aucuparia* and *S. Aria*. They were not found together in *Pirus communis, Cratægus oxyacantha, C. Azarolus* and *Mespilus Germanica*.

Emulsin was found to be located in numerous cells scattered through the parenchyma of the cotyledons and especially in the vicinity of woody bundles whose endodermis likewise contains it. It is entirely lacking in the external palisade cells. The hypocotyl, plumule and root do not contain it.

Amygdalin was not precisely located. It is found in the cotyledons, hypocotyl, plumule and root.

Germination does not change the localization of these two substances. [Bot. Gaz. 24, p. 54.]

The Detection of Adulterations in Powdered Drugs.

Dr. H. H. Rusby, as Chairman of Research Committee C of Revision of the U. S. Pharmacopœia, reports the results of important work in the line of methods for detecting adulterations in powdered drugs. The results of a number of investigations by several authors are summed up in a series of concisely stated tests recommended for introduction into the coming edition of the Pharmacopœia.

Usually the distinguishing characteristics to be observed are best seen in very fine powders.

To separate Cartagena ipecac from the official Rio variety, the powder should not exhibit solitary starch grains having a diameter of 16 microns or more and those having a diameter of 12 to 14 microns should be rare.

To exclude chestnut leaves from senna leaves the following method is given. If a thin layer of the powder be placed upon a glass slide laid upon white paper and one drop of a 5 percent solution of ferric chloride be dropped upon it, none of the particles should be blackened within thirty seconds.

To exclude the wild or Bombay mace also curcuma from the official mace, after treatment with potash solution, the powder should not exhibit dark particles which turn yellow upon the addition of sulphuric acid.

To distinguish the flowers of *Sambucus Canadensis* from the flowers of *S. nigra*, the powder should display single, stout, slightly curved, blunt, unicellular hairs and clusters of much smaller, short, crooked multicellular hairs.

To exclude the stem bark of sassafras from the official root bark in a number 60 powder, only thin walled cells are exhibited, almost invariably without pores and well filled with starch grains. Bast fibres are rare, but commonly detached. Starch grains are mostly in groups, the small ones lenticular, occasionally reaching a diameter of 12 to 15 microns.

To distinguish the Surinam quassia from the official Jamaica quassia, in a tangential view none of the medullary rays should exhibit a single row of cells, the latter having a subrotund outline and no stone cells should be present.

The younger form of Eucalyptus leaves is of inferior value and is excluded from the Pharmacopœia. In a fine powder no fragments of epidermis should be found

* Kobert, Lehrbuch d. Intoxicationen, p. 510.

in which the guard cells of the stomata can be distinctly seen in a vertical view, nor any fragments which, without having stomata, exhibit wavy epidermal cell walls in vertical view.

[Drug. Circ. and Chem. Gaz., 1897, p. 185.]

Blue Grass Manna.

R. T. Baker and H. G. Smith describe a true manna found on a "blue grass," *Andropogon annulatus*, Forsk. Its chief constituent is mannite, of which it yields 58 per cent., together with glucose and other sugars. The manna is mostly white, and in general appearance resembles eucalyptus manna. It is sweetish to the taste, not moist, breaks easily into fragments, and feels slightly greasy. [Proc. Roy. Soc., N. S. Wales.]

Bisabol-Myrrh.

Besides the officinal myrrh which is collected in Arabia and along the Somali coast of Africa from several *Commiphora* species there exists another if not several varieties. Little is known about this second variety which is known among the Somali as Habaghadi or female myrrh and among the Arabs as Bisabol (Baisabol, Mhaisabol, from Sanskr.: Mehiska, buffalo and mol, bol myrrh). It is known, however, that most of it comes from the interior of Somali and that almost all of it is taken to India and thence to China. It is also known that its ethereal extract does not give the red color with bromine vapor like the officinal or Herabol-myrrh.

In 1891 Prof. Keller while traveling in Somali purchased, while in the country of the Habar-Junis, a specimen of myrrh from a caravan on its way from Ogadec to the north (Berbera). Last year Prof. Hartwich received this specimen and at his request W. Tucholka examined the drug (abt. 2 Ko.)

The oleoresin contained 22.1 p. c. gum soluble in water; 29.85 p. c. "gum" soluble in soda solution; 21.5 p. c. crude resin; 1.5 p. c. crude bitter principle; 7.8 p. c. volatile oil; 3.17 p. c. water; and 13.4 p. c. plant remnants and inorganic impurities.

The oil is laevogyrate and has a high boiling point, 50 p. c. boiling at about 257°. A dihydrochloride, $C_{10}H_{16}.2HCl$, melting at 79.3°, was obtained. The regenerated hydrocarbon boils at 259—260.3° and, as it appears different from the known terpenes, is called bisabolene. A substance, $C_{56}H_{96}O$, boiling as 230—231° and giving the characteristic reaction of the crude drug was also isolated.

The examination of the resin yielded several amorphous substances which were analysed.

Chemical Constituents of the Root of Baptisia tinctoria R. Br.

This plant is also known as *Sophora tinctoria* L., *Podalyria tinctoria* Michaux, wild indigo and dyer's podalyria, and has found medicinal application in this country. Inasmuch as important therapeutic properties are claimed for its preparations, the root has been repeatedly examined.

Smedley examined it as early as 1862, but Weaver (1871) claimed that Smedley's alkaloid was nothing but calcium sulphate and that he (W.) was the first to prepare an alkaloid. Greene again examined it in 1879, and Schroeder in 1885. The latter obtained baptisin, a bitter glucoside insoluble in water; baptin, a glucoside soluble in water; and baptitoxine, a poisonous alkaloid. Plugge has shown that the alkaloid from the seeds is identical with cytisine so widely distributed in the family of *Leguminosæ*.

At the suggestion of the late Prof. Plugge, K. Gorter has undertaken a detailed study of the root. He isolated the following substances:—

I. Baptisin. This glucoside is laevogyrate and has the formula $C_{26}H_{32}O_{14}$. When hydrolyzed with sulphuric acid it splits up into baptegenin, $C_{14}H_{12}O_6$, and rhamnose (isodulcite), $C_6H_{12}O_5+2H_2O$, taking up four molecules of water. Baptisin is not poisonous to frogs. Various derivatives of baptegenin were prepared and studied.

II. Baptitoxine, which is identical with cytisine. Only 1.2 g. of the nitrate were obtained from 4.1 ko. of root. [Arch. f. Pharm. 235, p. 301.]

Guttapercha in Dutch Guiana.

The Foreign Office has recently issued a report, by Consul Churchill, on the *Balata* industry of the colony of Netherlands Guiana, which is of interest to the Forest Officers of India, as it shows that the list of trees which yield guttapercha or indiarubber is by no means complete.

The Indian Agriculturist for May draws the attention of the Forest Officers to this report, and publishes some interesting remarks as well as extracts from the report in question.

Balata is a kind of guttapercha obtained from the milky juice of the bark of the bully or bullet-tree, *Mimusops balata*, a large forest tree belonging to the order *Sapotaceæ*, which ranges from Jamaica and Trinidad, to Venezuela and French Guiana. Although the tree has been known for years past, its wood, which is very hard, having been largely used for sugar-mill rollers, machinery and building purposes, the collection of the juice for the manufacture of guttapercha is of recent origin, and it is to this point that attention is drawn, as there are probably many trees indigenous to India capable of yielding guttapercha in paying quantities.

The bullet-tree is found (in Netherlands Guiana) in greatest abundance in the low-lying zone of fluviomarine deposit. It also occurs in the higher lands of the interior, but in less abundance and more scattered. In the most suitable localities upwards of twenty or thirty trees of a thickness of twelve to thirty inches may be found within a radius of one hundred feet. Where the tree is less plentiful two or three trees only will be found in the same area. When the thickness of the trunk exceeds thirty inches, the tree is usually not worth bleeding. The juice-gatherer usually discovers the trees from a distance by their foliage, or recognizes his proximity to them by changes in the character of the bush.

The tree often grows in belts or zones, on which it flourishes, dominating all the other trees. The limits of the zones or belts being crossed, the forest may be traversed for hours without a single bullet-tree being met with, after which another zone may probably be entered by the traveller.

It seems that balata is by no means neglected, and would, in fact, find ready purchasers if more came into

the market. At present the supply is not only uncertain but very limited.

Balata commands a higher price than guttapercha, and this, in itself, is a proof of its valuable qualities. It is generally used only for special purposes, and the manufacturers treat it simply as a superior kind of guttapercha, and hence, when manufactured, its name disappears.

Nevertheless, balata presents distinct physical differences from guttapercha. It is much softer at the ordinary temperatures and not so rigid when cold. From a chemical point of view, balata, guttapercha and caoutchouc are probably closely allied.

A marked and important difference is exhibited in the behavior of balata under the influence of the atmosphere. When exposed to light and air, guttapercha soon becomes altered superficially and changed into a brittle resinous substance; under similar conditions balata changes but slowly. Dr. Hugo Müller states that a piece of balata tissue which he had in his possession was, after six years, still supple and coherent, although showing a slight mealy efflorescence. A similar piece of guttapercha tissue would have become brittle and resinous long before that time had elapsed.

The insulating qualities of balata, from an electrical point of view, are said to be quite equal to those of guttapercha, so that a sufficient and constant supply, and a somewhat lower price, are the only conditions now necessary to make the industry a complete success.

The balata industry in the colony is still in its infancy. In Surinam, the forests which have been bled are abandoned and new lands are being sought for and exploited. Only those areas where an abundance of trees is to be found have been selected. The forests are all Crown property and are leased to the Colonial Government, for the exploitation of balata only, at a rental of 10c. per hectare per annum. There is no export duty whatever.

The "juice-gatherer" receives about 50c. to 55c. per pound, a gallon of the "milk" usually yielding about four pounds of balata. The average yield in Surinam is one gallon per tree. Incisions are made from the base to a height of twenty feet and the bark is scarified over half its circumference; further scarification is illegal. An average gatherer will obtain about four gallons per day; but as much as ten gallons may be obtained in the same time by a very successful workman. Upwards of a thousand men, chiefly recruited from Berbice, in British Guiana, are employed in the colony in the balata industry.

The hot and wet seasons are unsuitable for the gathering. The trees blossom in August, and the seed drops during November, when the leaves shoot. Toward the end of January the juice attains the condition in which it runs most plentifully. It sometimes happens that a tree does not yield juice when the gatherer visits it, and under the present conditions of cultivation it is not profitable to return later when the juice would be ready. Considerable loss arises in this manner. The flow of "milk" during the flowering season is not sufficient to pay for the cost of collection. Work ceases about the end of August, and is resumed during the middle of January.

Balata cannot be purchased in the market of Paramaribo. It is only gathered for those who employ "Balata Bleeders"; hence, quotations as to price are not available, although the Colonial Government gives a valuation for statistical purposes. The only certain thing known is that the juice-gatherer receives from some employers 50c., and from others 55c. per pound for balata. In addition to this, however, there are other incidental expenses to be added, such as commission to foremen, loss by runaway "gatherers" and capsizing of boats, deaths, thefts, cost of transportation, surveying of concessions on occasion of dispute as to boundaries, assistance of trackers and pilots, etc., etc.

The official statistics show that the value of balata exactly doubled in the four years from 1889 to 1893.

"RETURN OF BALATA EXTRACTED FROM THE COLONY OF NETHERLANDS GUIANA."

Year.	Quantity in Kilos.	Value in Florins.
1889	1,509	1,508
1890	76,326	95,407
1891	95,587	143,381
1892	120,680	181,019
1893	32,546	65,092
1894	108,286	216,573
1895	133,681	267,362

[Journ. Imp. Inst., 3, p. 250.]

Physiology and Pharmacology.

The Toxicity of Human Perspiration.

This question is receiving much attention in Paris lately, it having been shown that the perspiration obtained from the flannel vest of a market porter and that taken from the glove of a lady who had danced for several hours, when injected in rabbits gave rise to acute symptoms of poisoning. The question was recently introduced at the Paris Academy of Sciences last week by Arlving of Lyons. He found that the prespiration resulting from muscular exercise, such as bicycling, dancing, fencing, etc., is more poisonous than that produced by a Turkish bath or other artificial means. M. Berthelot mentioned that, according to Africanus, the ancients used the sweat obtained from horses for poisoning the points of their arrows.

[C. & D. 1897, II, p. 256.]

Eel-Serum.

Angelo Mosso of Turin, who first called attention to the poisonous properties of eelblood, also pointed to the similarity between a poisoning resulting from eelserum and that resulting from snake poison. This led C. Phisalix of Paris to use eelserum for purposes of immunization in a similar manner in which serum from the viper had already been used. In order to first deprive the eelblood of its poisonous properties, it is heated for 15 minutes to a temperature of 58°. Of this 10 ccm. can be injected into a guineapig with impunity, whereas 1 ccm. of the blood before being heated will kill the animal in several hours. Guineapigs immunized in this manner can be injected with snake poison without detriment. The snake poison, however, must not be injected until 16—24 hours after the immunization, otherwise death will result. The immunizing substance is supposed to be of the nature of an albuminose or peptone.

[Die Natur, 46, p. 167; from C. r. de Soc. de Biol.; 1896; p. 1128.]

Literary.

Books and Pamphlets Received.

Charles Scribner's Sons—New York. An Illustrated Flora of the Northern United States, Canada and the British Possessions from New Foundland to the parallel of the southern boundary of Virginia, and from the Atlantic Ocean westward to the 102d meridian. By Dr. Nathaniel Lord Britton, Director-in-chief of the New York Botanical Garden and Hon. Addison Brown, President of the Torrey Botanical Club. Vol. II, pp. 642, *Portulacaceae* to *Menyanthaceae*. 1897. $3.00.

Deutscher Apotheker-Verein—Berlin. Arzneimittel, welche in dem Arzneibuch für das Deutsche Reich, dritte Ausgabe (Pharmacopoea Germanica, editio III), Neudruck 1895, nicht enthalten sind. Zweite Ausgabe. Bearbeitet und herausgegeben von dem Deutschen Apotheker-Verein.* Berlin 1897.

R. Gaertner's Verlagsbuchhandlung—Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Litteratur. Herausgegeben von Dr. Emil Jacobsen. 36. Jahrgang, 1897. Erstes Halbjahr, erste Hälfte. 1897, pp. 1—136.

Verlag von Gustav Fischer—Jena. Lehrbuch der physiologischen Chemie mit Berücksichtigung der pathologischen Verhältnisse. Für Studierende und Aerzte, von Dr. Richard Neumeister, a. o. Professor der physiol. Chemie a. d. Universität Jena. Zweite, vielfach vermehrte und theilweise umgearbeitete Auflage. Ein Bd., pp. XIX. 928. 1897. M. 17.00, geb. M. 19.50.

John Wiley & Sons—New York. Incompatibilities in Prescriptions for students in pharmacy and medicine and practicing pharmacists and physicians. By Dr. Edw. H. Ruddiman. Adjunct Professor of Pharmacy and Materia Medica in Vanderbilt University. One vol., pp. 264. $2.00.

Carl Winter's Universitäts-Buchhandlung — Heidelberg. Gmelin-Kraut's Handbuch der Chemie. Register zur Anorganischen Chemie, in drei Bänden. Sechste umgearbeitete Auflage. Brochure, pp. 81. 1897. M. 2.00.

Depart. of Agr., Div. of Botany—Washington, D. C. Some common poisonous plants. By V. K. Chestnut, Assistant in Division of Botany. Reprinted from the Yearbook of the Dept. of Agr. for 1896. Pamphlet, pp. 10.

Author—The root of phytolacca decandra. By George B. Frankforter and Francis Ramaley. Reprint from the Am. Journ. Pharm. Pamphlet, pp. 10.

* Geschäftsstelle: Berlin C. 22, an der Spandauer Brücke 14.

Authors—Periodides of pyridine. By P. F. Trowbridge.—Halides and perhalides of pyridine. By P. F. Trowbridge and O. C. Diehl. Reprints from the Journ. of the Am. Chem. Soc. Pamphlet. pp. 10 & 17 resp.

Author—The California manna. By J. U. Lloyd. Reprint from Am. Journ. Pharm. Pamphlet, pp. 10.

—— Empiricism — Echinacea. By J. U. Lloyd. Reprint from the Ecl. Med. Journ. Pamphlet, pp. 8.

—— Physostigma venenosum (Calabar). By J. U. Lloyd. Reprint from Western Druggist. Pamphlet, pp. 8.

Reviews.

Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 1896. 30. Jahrgang. R. Gaertner's Verlagsbuchhandlung, Hermann Heyfelder, Berlin. 1897.

This journal has now completed the 30th year of its existence. It appears quarterly, the first and third, and the second and fourth parts of each volume treating the same subjects. The subject-matter of the latter parts includes: paper; photography and printing; wastes, fertilizers, disinfection; soaps; matches and explosives; preparation and purification of chemicals; chemical analysis; apparatus, machines, electrotechnique, pyrotechnique; secret remedies; adulteration of commercial products, book reviews. Among these, it will be seen, are several of special interest to the analytical chemist and the pharmacist. Illustrations are inserted in all cases where they are necessary for the complete understanding of the text. To show the amount of literature covered by the abstract it need only be mentioned that they are taken from 137 journals, representing most European countries and the United States.

Richard Fischer.

Vierteljahresschrift über die Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel, der Gebrauchsgegenstände sowie der hierher gehörenden Industriezweige. Redigirt von Dr. A. Hilger, Professor an der Universität München. Elfter Jahrgang, 1896. Verlag von Julius Springer, Berlin. 1897.

The appearance of the fourth part completes the eleventh volume of this valuable quarterly. The aim of the journal, as its name implies, is to report every three months the progress made during that time in the chemistry of foods and food-stuffs. To this end, we find abstracts of all articles published on the subject, and from a variety of sources that would be unavailable to the ordinary chemist. The names of the editors, Dr. A. Hilger, Dr. J. König, Dr. R. Kayser, and Dr. E. Sell to-

gether with those of the sixteen colaborers vouch for the thoroughness of the work.

To give an idea of the subjects treated of, the headings will here be enumerated: meat, peptone and meat preparations, eggs, milk, cheese, butter, food-fats, spices, coffee, cacao and chocolate, tea, sugars, fruit-juices, fermentation phenomena, wine, beer, spirituous liquors, vinegar, starch, flour and bread, drinking water, mineral waters, preserves and preservative agents, analytical methods and apparatus, laws, ordinances and court-decisions, experiment stations, literature. As an examination of this list will show, the subject-matter, while primarily intended for food-chemists, also contains much of interest and value to the pharmacist.

Richard Fischer.

Manuale der neuen Arzneimittel für Apotheker, Aerzte und Drogisten, enthaltend über 2000 neue und neueste Arzneimittel, zusammengestellt von J. Mindes, Magister Pharmaciæ. Druck und Verlag: Art. Institut Orell Fuessli, Zürich. 1897. M. 4.60.

While commenting on the so-called "new remedies" at the beginning of the year (see p. 35 of this journal) the writer called attention to the fact that a certain abuse of the term "new" had led to the use of the word "newer" and expressed the opinion that the use, misuse and abuse of this latter term might ultimately lead to the superlative form of this attribute. In the book before us we have reached that stage. The object of the manual is to enable pharmacists, physicians and druggists to inform themselves readily with reference to the "new," "newer" and "newest" remedies, the book being brought up to date, viz. up to the end of 1896. It contains 2075 articles with 1320 synonyms. In the index the synonyms are arranged alphabetically with the primes.

The list comprises not only chemicals, but the more recent vegetable and animal drugs of our newer materia medica as well, also a number of galenical preparations. The manual will prove exceedingly valuable to most pharmacists and physicians who have no large library with recent journals and yearbooks. Even those who are so fortunate as to possess more detailed information in their library than this manual affords, will find the small volume very convenient for ready reference. Although the book is by no means perfect, it possesses so many practical advantages that it can be strongly recommended to anyone in need of a fairly complete manual of this kind.

E. K.

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Pharmaceutical Review.

(Formerly **Pharmaceutische Rundschau.**)

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EDITORIAL.

As is well known to the readers of the Review an international medical congress was held at Moscow, and an international pharmaceutical congress in Brussels, both during the month of August. European journals and papers have brought more or less complete reports of both. Although the reports from the medical congress are the less complete at present, it has already become quite evident that a comparison would proove exceedingly odious. Whereas the attendance at Moscow was very large, the attendance at Brussels did not include more than a mere handful from other countries than Belgium. According to an English journal the British Pharmaceutical Society was represented only by the editor of its journal, and from the beginning to the end not a German word was heard in the deliberations of the congress. As far as attendance is concerned the term international does not seem to be justly applicable to the Eighth any more than to the Seventh International Pharmaceutical Congress held at Chicago in 1893. In this connection attention should be called to the fact that German pharmacists, so conspicuously absent at Brussels were in attendance at Moscow.

According to the reports of the proceedings the term international was scarcely justifiable as far as these are concerned. The subjects on the programme were principally of interest to Belgium and almost exclusively presented from the Belgian standpoint.

As was to be expected, the question of an international pharmacopœia was revived at Brussels, but the amusing feature in the revival of this ghost was that a similar seance was conducted at Moscow at the same time. It is also worth noting that apparently it had already been forgotten that the Chicago Congress had appointed a committee to attend to this matter and that the American Pharmaceutical Association had voted the sum of $1,000 to defray the expense of publishing such a book. A committee of three is to report on this matter at the next congress to be held in Paris in 1900. The reader who is interested in the question of international pharmaceutical congresses in general may peruse to advantage some of the articles on this subject from the pen of Dr. Hoffmann in the earlier volumes of this journal. [1885, p. 221; 1889, p. 184; 1890, p. 153; 1892, p. 377; 1893, pp. 1, 51, 104, 200].

At the Dresden meeting last year, the German Apothecaries Society was requested to appoint a commission whose duty it should be to edit a homeopathic pharmacopœia, which like the allopathic pharmacopœia contained a description of the appearance and other characteristics of homeopathic vegetable and animal preparations. Although Hahnemann, the father of homeopathy, was a German his disciples found in America the most favorable conditions for practice and the spread of their doctrines, so that to-day there are said to be more than 12,000 homeopathic physicians in this country, more than twice as many as in all other countries taken together. Yet Germany appears to have produced the largest number

of homeopathic pharmacopœias, viz. those of Hartmann, Caspari, Marggraf, Gruner, Hager, Buchner. and the Parmacopœa homeopathica polyglotta of Dr. Willmar Schwabe. In fact, the author of the last named work, which since 1872 has appeared in three editions and in six different languages, claims that the American Homeopathic Pharmacopœia is nothing else than a literal translation of his work with the addition of a description of the medicaments.

This question of a German homeopathic pharmacopœia to be recognized by the German government certainly is a matter of great concern to the homeopathic school of physicians. It is also worthy of our attention. It certainly is significant that the request for such a book should proceed from the German apothecaries. Pharmacy is bound to no medical school or doctrines. It is proper that the pharmacist should make homeopathic and eclectic preparations as well as those of any body of medical men whether "regular" or "irregular", whether professing to belong to a school or to be free from schools. As long as the various medical factions cannot unite and no "irregular" preparations can be introduced into the "regular" pharmacopœias, it is well that the various pharmacopœias of the different schools should receive more attention than has been accorded them in the past.

The German apothecaries were, no doubt, influenced in their action by the desire to possess a standard acknowledged by the government enabling them to make homeopathic preparations as uniform as possible and for which they could assume responsibility. There can, however, be no doubt that they were also influenced by pecuniary motives. If such a pharmacopœia is once realized there is no longer any need for the German homeopathic physician to purchase his medicines in the United States as he now largely does. The German apothecary will, no doubt, be the gainer.

In this country the average druggist has so long been in search of "profitable side-lines" that his store looks more like a miniature department store than like an apothecaries' shop. Legitimate pharmacy, as it is now frequently designated, has with many become a side-line and has accordingly suffered. The American pharmacist has fought for recognition as the most important factor to be considered in the preparation of the United States Pharmacopœia. He has received it and has made this work a credit to himself at home and abroad. But he appears to have done nothing, except possibly as an individual, as far as other pharmacopœias are concerned.

Wisconsin will celebrate its semi-centennial as a state in 1898, not by inaugurating a large fair or exposition, but by appropriate festivities partaking principally of an historic character at the capital and in other parts of the state. In harmony with this action the Wisconsin Pharmaceutical Association at its recent meeting at Green Bay appointed a committee to devise plans for a historic session to be held in connection with the Waupaca meeting next August. In order to make such a session a success it will be necessary to rouse a general interest on the part of Wisconsin's pharmacists. Any person, who has attempted systematic work in the study of the history of pharmacy of but a single state, knows how difficult it is to obtain reliable facts. Druggists frequently seem to have forgotten important episodes in the history of their calling in which they played an important part. Others, from whom valuable information might have been received, have died and no record of their activity can be found. It seems a pity that it should be thus, for the history of pharmacy even in our newer states is by no means devoid of interest.

In order to rouse a general interest in this topic on the part of Wisconsin's pharmacists the committee appointed at Green Bay has secured the publication of a series of articles on one phase of the history of pharmacy in Wisconsin, viz. that of pharmaceutical legislation. These articles will appear in the Review beginning with this number. The results of a study extending over several years are here presented, not with an idea of completeness, but with the hope that they will create a more general interest and bring out further facts, thus leading ultimately to a more perfect understanding of this by no means uninteresting subject. The committee further hopes to secure material for a somewhat detailed exposition of the complete history of pharmacy of the state and also a sufficient number of pharmaceutical objects to equip an historic drug store. Whether it will be successful in this or not depends very largely upon a general interest that must first be awakened.

The Review, as a scientific and professional organ, not hampered by geographical boundaries of state or even country or by the interests of school or faction, has as a rule avoided subjects of a decided provincial tone. If it appears to shift somewhat from its former policy in the publication of these articles, attention may justly be called to the fact that deductions which can be drawn from the historic facts therein presented, are of wider than mere provincial significance to the student of American history. Furthermore, it may be hoped that the example set by Wisconsin, if thus made known, will lead other states to become active along similar lines. If this should prove true, the publication of these articles in the Reveiw certainly requires no further justification.

E. K.

ORIGINAL CONTRIBUTIONS.

The Caffein Compound of Kola.*

Part II.

KOLATANNIN.

By *James W. T. Knox* and *Albert B. Prescott.*

Combustions of Kolatannin.

The tannin was analysed by combustion with the following stated results:

	I.	II.	III.	Calculated for $C_{16}H_{20}O_8$.
Carbon	56.74	56.81	56.90	56.45
Hydrogen	5.71	5.62	5.76	5.90
Oxygen	37.55	37.57	37.34	37.65
	100.00	100.00	100.00	100.00

Having this satisfactory evidence of the preparation of a pure chemical compound, we next proceeded upon the task of determining its constitution, first by finding the number of hydroxyl groups in the molecule containing C_{16}.

Pentacetyl Kolatannin.

An acetyl derivative was next formed for the object above stated. The tannin was boiled with acetyl chlorid for about one hour under a return condenser, then an equal volume of glacial acetic acid was added, after which the liquid was poured slowly into ice-cold water. The acetyl compound separated out as a voluminous whitish precipitate. This was rapidly filtered at the pump and well washed with cold water, then it was dried with bibulous paper and finally in a vacuum desiccator over sulfuric acid. It was a nearly white or gray-white powder, tasteless, having a faint odor of acetic acid and was insoluble in water, sparingly soluble in ether, and freely and completely soluble in chloroform, in alcohol, and in glacial acetic acid.

Analysis of the body gave the following stated results:

	Found.			Calculated for $C_{16}H_{15}(C_2H_3O)_5O_8$.
By combustion.	I.	II.	III.	
Carbon	56.55	56.68	56.76	56.72
Hydrogen	5.39	5.36	5.24	5.47
Oxygen	38.06	37.96	38.00	37.81
By saponification.				
Acetyl	38.24	38.47	38.68	39.09

On comparing the values given by analysis with those calculated for the pentacetyl derivative, the agreement seems to be satisfactory.

The acetyl values in the analysis by saponification as detailed below are a little low, but it is quite possible that this is to be ascribed to defects in the method of estimation rather than to other causes. At any rate the acetyl content seems without doubt to indicate five hydroxyl groups in the molecule rather than four or six.

Continued from p. 176.

The analyses by combustion were made in the ordinary way: the estimation of acetyl was conducted in the manner next described.

Determination of Acetyl.

The acetyl compound, 0.500 to 1.000 gm., varying with the supposed acetyl content is boiled with thirty to forty c. c. of six per cent sulfuric acid in a flask fitted with reflux condenser for two hours. One hundred to one hundred and fifty c. c. water are now added and without filtration the volatile contents of the flask distilled into a known quantity of decinormal potassium hydroxid solution, being careful to avoid a high enough temperature or sufficient concentration to cause distillation of the sulfuric acid. More water is now added to the distilling flask and the distillation repeated. The contents of the receiver should be kept alkaline and a few drops of phenol-phthalein solution added, so that any change in the reaction of the solution may be instantly noted. The distillation should be repeated several times until the last one hundred c. c. of distillate contains no acetic acid. The excess of alkali is to be titrated with decinormal hydrochloric acid, and the amount of acetic acid calculated from the difference between the amount of alkali solution first taken, and the quantity of hydrochloric acid required to neutralize it. Barium chlorid is now added and if any precipitation takes place, the barium sulfate is collected and weighed, the sulfuric acid calculated and correction made for it. If a halogen be present in the acetyl compound a sufficient excess of silver sulfate is added to the contents of the distilling flask before distillation, to precipitate it completely as silver salt.

The above was occasionally deviated from by heating the acetyl compound with the dilute acid in sealed tubes two or three hours at 130°, then cooling, opening, transferring to a flask and distilling as before described.

The following described method was used a few times, but without apparent advantage over the others: The sample is boiled with twenty times its weight of alcoholic solution of potassium hydroxid, of 5.00—8.00 percent alkali strength, in a flask under return condenser. Phosphoric acid is added in excess and the contents of the flask distilled with steam into a receiver containing a known quantity of decinormal alkali solution. To drive the acetic acid over completely requires distillation of about a liter of water. The same precautions are observed as in the preceding methods if halogens are present.

BROMIN DERIVATIVES OF KOLATANNIN.

The bromin compounds of this tannin have been investigated at considerable length, for the purpose of obtaining further data concerning its constitution.

Tribrom Kolatannin.

When bromin water is added to a water solution of kolatannin, a dark colored body is precipitated, and with continued addition of the reagent the precipitation goes on until complete, during which the precipitate formed becomes lighter colored until at the end, in the presence of an excess of bromin, it is pale brownish-yellow and further

addition of bromin water produces no change. It is quite voluminous and cannot well be filtered at the pump, but is collected by ordinary filtration and well washed with water until the washings remain clear when treated with silver nitrate solution. It is dried first on porous plates, then in a vacuum desiccator to constant weight.

During the process of drying it gradually changes color until it becomes reddish-brown. It is odorless and nearly tasteless, insoluble in water, ether, chloroform and benzene, but is readily soluble in alcohol and in acetone.

In the clear filtrate, after the bromin compound has been removed, hydrobromic acid is easily identified and for that reason the change is believed to be one of substitution. It may be questioned perhaps whether this is not caused by the action of bromin on the water; the bromin water, however, was freshly prepared and the hydrobromic acid formed under these conditions would be very little. But in preparing twenty-five or thirty grammes of this bromin compound, after its precipitation the filtrate was agitated with carbon disulfid to remove the excess of bromin, then separated and the aqueous portion concentrated to small volume, which had an acid taste and reaction and in which hydrobromic acid was easily identified.

The bromin compound was analysed with the following stated results:

By combustion.	Found. I.	II.	III.	Calculated for $C_{16}H_{17}Br_3O_8$.
Carbon	32.91	33.12	.....	33.28
Hydrogen	2.69	2.58	.....	2.95
Oxygen	22.86	22.63	.....	22.18
As silver salt.				
Bromin	41.54	41.67	41.62	41.58

The percentage of carbon in this body, when compared with that of the pure tannin from which this was prepared, seemed to indicate the substitution of three hydrogen atoms by that number of bromin atoms.

Pentacetyl Tribrom Kolatannin.

(From Tribrom Kolatannin.)

For the purpose of obtaining further data, an acetyl compound of the bromin derivative was formed: The bromin compound was boiled with acetyl chlorid for about forty-five minutes, under a reflux condenser. An equal volume of glacial acetic acid was added to the clear red solution and the liquid well cooled by freezing mixture. Then it was poured slowly into twelve or fifteen times its volume of ice-cold water, which is constantly stirred. A thermometer should be kept in the beaker containing the precipitate, and if the temperature rises above 10°, it is best to cool the contents by placing the beaker in freezing mixture, resuming addition of the acetyl chlorid on cooling, until all has been used. The acetyl compound separates as a flocculent yellow precipitate, is quickly filtered, well washed and dried, first on porous plates, then in a vacuum desiccator.

It is a tasteless golden-yellow powder, having a faint odor of acetic acid. It is insoluble in water, nearly insoluble in ether, but soluble in alcohol, in acetone, and in chloroform. It loses acetic acid when gently heated, and both bromin and acetic acid on stronger heating. It was analysed with the following stated results:

By combustion.	Found I.	II.	Calculated for $C_{16}H_{12}Br_3(C_2H_3O)_5O_8$.
Carbon	39.43	39.55	39.65
Hydrogen	3.44	3.34	3.44
Oxygen	26.57	26.65	26.43
As silver salt.			
Bromin	30.56	30.46	30.48
By saponification.			
Acetyl	26.91	27.12	27.32

The results obtained agree very closely with the calculated formula and give additional confirmation to the formulas assumed for the pure tannin and its tribrom compound.

Halogen Determination.

For the halogen determinations in the bromin compounds of kolatannin, the well known process of heating the halogen derivative with fuming nitric acid and silver nitrate in a sealed tube for two hours at 175° was followed. Experience taught us, however, to first make a preliminary determination with a considerable excess of silver nitrate to ascertain the approximate amount of halogen present. For example, where in one case the preliminary determination indicated 40.88 percent of bromin, the following ones in triplicate with only a slight excess of silver nitrate were respectively 41.54 p. c., 41.67 p. c., 41.62 p. c. And as a rule the preliminary determinations have given low results, but are necessary to furnish data for the second and more exact estimations.

Having obtained the approximate amount of halogen present, the following details of manipulation were followed: The size of the sample taken is adjusted so that the weight of the resulting silver salt shall be 0.150 to 0.200 gm. Six or eight percent more than the theoretical quantity of silver nitrate is now weighed and placed with the sample in a hard glass tube with six c.c. fuming nitric acid, after which the tube is sealed and heated at 175°—180° for two hours. It is then opened and the contents are transferred to a beaker with about 100 c.c. water and heated on the water bath for one half hour. The silver bromid is then collected on weighed asbestos filters, connected with the pump, washed successively with hot water, alcohol and ether and dried twenty or thirty minutes at 80°—85° to constant weight.

In some cases the excess of silver nitrate in filtrate was determined gravimetrically as silver chlorid for a check on the results.

Our thanks are due to Professor Edward D. Campbell of this University for many valuable suggestions on halogen and acetyl determinations.

Tribrom Pentacetyl Kolatannin.

(From Pentacetyl Kolatannin.)

Having acetylised the tribrom compound of tannin and obtained a pentacetyl derivative of it, we decided to brominate the pentacetyl compound and determine by analysis whether or not the resulting product was identical, in other words to ascertain whether the order in which the substitutions were made affected the result.

This bromination was accomplished by dissolving the pentacetyl tannin in strictly pure, anhydrous chloroform, free from alcohol, and adding a slight excess of bromin. The solvent was then distilled off in partial vacuum, while the bromin-

ated acetyl compound remained behind as a golden-yellow mass. This was treated with ether several times and redistilled, using the pump, to remove the traces of chloroform and finally transferred to a vacuum desiccator and left until completely dry.

In color, taste and solubilities this body is identical with that obtained by acetylising the tribrom derivative. It was analysed with the following stated results:

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{12}Br_3(C_2H_3O)_5O_8$.
Carbon	39.49	39.62	39.65
Hydrogen	3.39	3.47	3.44
Oxygen	26.61	26.34	26.43
As silver salt.			
Bromin	30.51	30.57	30.48
By saponification.			
Acetyl	26.84	26.98	27.32

Inasmuch as the results of the analysis of this body coincide quite closely with the theoretical figures as in the preceding case, it may be safely assumed that the bodies are identical and that in the preparation of a pentacetyl tribrom kolatannin it makes no difference whether the bromin or acetyl is introduced first.

Tetrabromin Kolatannin.

We next wished to ascertain whether this tannin was capable of taking more than three bromin atoms into combination in each molecule. Nothing but the tribrom derivative was formed by treating an aqueous solution of the tannin with bromin water in excess, so another solvent was tried successfully. Taking a weighed quantity of tannin, it was dissolved in alcohol and bromin was added gradually to the alcoholic solution in slight excess of the theoretical quantity necessary to form a tetrabrom derivative. The liquid remained clear, all the bromin compounds of kolatannin that we have yet prepared being easily soluble in alcohol. The bromin compound was precipitated by pouring the brominated alcoholic solution into twelve or fifteen volumes of ice-cold water; being insoluble in water, it is separated as a voluminous reddish-brown precipitate, which is filtered, washed and dried in the way already described under the method of preparation of tribrom kolatannin.

This body agrees in solubilities with the tribrom compound; it is slightly darker, however, and has a faint odor of bromin. It was analysed with the following stated results:

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{16}Br_4O_8$.
Carbon	29.59	29.46	29.27
Hydrogen	2.46	2.38	2.44
Oxygen	18.97	18.88	19.52
As silver salt.			
Bromin	48.98	49.28	48.77

This, then, is a tetrabrom derivative of kolatannin. From it an acetyl compound was formed, following the manipulations already described.

Pentacetyl Tetrabromin Kolatannin.

This acetyl compound was yellow and but slightly darker than that of the tribrom derivative. In other physical properties it appeared identical with that body.

It was analysed with the following stated results:

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{11}Br_4(C_2H_3O)_5O_8$.
Carbon	35.82	35.97	36.03
Hydrogen	3.02	2.95	3.01
Oxygen	24.02	24.14	24.02
As silver salt.			
Bromin	37.14	36.94	36.94
By saponification.			
Acetyl	24.42	24.59	24.83

From the above it is seen that the tetrabrom derivative forms a pentacetyl compound equally as easily as the tribrom derivative.

Pentabrom Kolatannin.

This derivative was formed while trying to prepare a hexabrom substitution product, but by reason of an insufficiency of bromin the resulting product yielded analytical results corresponding fairly well with those calculated for pentabrom kolatannin.

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{15}Br_5O_8$.
Carbon	25.87	25.99	26.13
Hydrogen	2.07	1.86	2.04
Oxygen	17.35	17.31	17.42
As silver salt.			
Bromin	54.71	54.84	54.41

This body may be a mixture of the hexa- and tetrabrom tannins. It is somewhat difficult of formation, however, and we have not always been able to obtain it in a manner analogous to the methods of preparation of the other bromin compounds. We do not consider that all conditions necessary to its formation are yet understood. There is no good evidence that this is a mixture of the other derivatives, however, and for the present there is really no sufficient reason for mentioning it as other than a pentabrom tannin. It is soluble in the same agents as the other bromin compounds, and is less stable than the tetrabrom compound, the odor of bromin being much more distinct. It appears to be a characteristic of these bodies, that with increasing percentage of bromin, there is decreasing stability (that is to say a greater tendency to lose bromin), and darker color.

Pentacetyl Pentabrom Kolatannin.

(From Pentabrom Kolatannin.)

This was prepared by acetylising pentabrom kolatannin in the usual way. In properties and appearance it closely resembles the other bromacetyl derivatives, except that its color is somewhat darker yellow. It was analysed with the following stated results:

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{10}Br_5(C_2H_3O)_5O_8$.
Carbon	33.54	33.39	33.02
Hydrogen	2.77	2.65	2.65
Oxygen	20.97	21.37	22.01
As silver salt.			
Bromin	42.72	42.59	42.32
By saponification.			
Acetyl	22.15	22.36	22.75

This body was also prepared from pentacetyl kolatannin as stated next below.

Pentabrom Pentacetyl Kolatannin.

(From Pentacetyl Kolatannin.)

Having ascertained by previous experiment that addition of a considerable excess of bromin

to an alcoholic solution of kolatannin, resulted in the formation of a hexabrom derivative, we wished to prepare a hexabrom pentacetyl derivative by brominating the pentacetyl derivative in the same manner.

Analysis of the resulting product showed, however, that contrary to our expectations, not a hexabrom but a pentabrom derivative, was formed, identical with the one described in the preceding section. The analytical results:

	Found.		Calculated for
By combustion.	I.	II.	$C_{16}H_{10}Br_5(C_2H_3O)_5O_8$.
Carbon	33.19	32.97	33.02
Hydrogen	2.60	2.71	2.65
Oxygen	21.90	21.95	22.01
As silver salt.			
Bromin	42.31	42.37	42.32
By saponification.			
Acetyl	22.31	22.47	22.75

Hexabrom Kolatannin.

By treating an alcoholic solution of kolatannin with bromin in considerable excess a hexabrom compound is formed, which is separated in the same way as the tetra- and pentabrom derivatives. It is darker colored than either of the others and has a very distinct odor of bromin. It is soluble in the same media as the other bromin compounds. It was analysed with results stated next below:

	Found.		Calculated for
By combustion.	I.	II.	$C_{16}H_{14}Br_6O_8$.
Carbon	23.48	23.57	23.59
Hydrogen	1.68	1.79	1.72
Oxygen	15.73	15.38	15.73
As silver salt.			
Bromin	59.11	59.26	58.96

Tetracetyl Hexabrom Kolatannin.

(From Hexabrom Kolatannin.)

This acetyl compound was prepared in the usual way, by boiling with acetyl chlorid, and was supposed, before analysis, to be a pentacetyl derivative. It had a dark yellow color, a faintly pungent taste and a slight odor of bromin and acetic acid. Soluble in chloroform and in alcohol, insoluble in water. The analytical results which are next stated show it to be a tetracetyl hexebrom tannin:

	Found.		Calculated for
By combustion.	I.	II.	$C_{16}H_{10}Br_6(C_2H_3O)_4O_8$.
Carbon	29.57	29.39	29.33
Hydrogen	2.21	2.32	2.25
Oxygen,	19.41	19.21	19.55
As silver salt.			
Bromin	48.81	49.08	48.87
By saponification.			
Acetyl	16.86	17.19	17.52

Indications of Molecular Constitution.

From the analytical results of the pentacetyl pentabrom tannin and of the hexabrom compound with its tetracetyl derivative, it appears that the total number of groups or atoms which may be substituted in the way described is ten: that if five of acetyl be introduced first only five bromin atoms may be substituted for hydrogen, but that if the bromin be introduced first, six bromin atoms can be introduced by carrying bromination to the limit, and in this hexabrom compound only four hydroxyl groups remain. This appears to indicate that the sixth bromin atom introduced bears a relation to the molecule in some respect different from that of any other bromin atom. But it might be expected that a limit would be reached in the total number of negative groups or atoms which can be retained in the molecule. The greatest number of acetyl groups probably indicates the entire number of hydroxyls. And a balance of evidence seems to favor the conclusion that there are six atoms of hydrogen directly united with the carbon of a benzene chain. These numbers are all in ratio to sixteen atoms of carbon. That the molecule contains C_{16}, or some multiple of this, appears from the quantitative results. We attempted to find the molecular weight of kolatannin, tribrom kolatannin, and pentacetyl tribrom kolatannin by the cryoscopic method, but the results so far obtained are utterly meaningless. Further indications of molecular constitution may be drawn from a study of the anhydrides, account of which next follows, also from the results of the action of acids, and especially from the products by fusion with alkali, all stated further on in this paper.

THE ANHYDRIDS OF KOLATANNIN AND THEIR DERIVATIVES.

By judiciously heating kolatannin several anhydrids may be prepared, as described below, the amounts of water driven off varying with the temperature and the duration of its application. The first anhydrid of the series, that in which two molecules of tannin lose one molecule of water, and of which the empirical formula is $(C_{16}H_{19}O_7)_2O$ is formed by heating kolatannin at 107°–110° to constant weight. This anhydrid is darker colored than the tannin from which it is prepared and is less soluble in water: the second anhydrid, by an oversight, we did not attempt to prepare. If we may judge by the temperature required for the preparation of the first, third and fourth members of the series, this one would result from heating the tannin a sufficient time at 120°–125°. Its theoretical formula is $C_{16}H_{18}O_7$. The third anhydrid $(C_{16}H_{17}O_6)_2O$ results from heating the tannin at 135–140. It is dark reddish-brown and nearly or quite insoluble in water. The fourth anhydrid, $C_{16}H_{16}O_6$ is dark brown, insoluble in water and is the result of heating kolatannin two hours, at 155°–160°.

These anhydrids are all soluble in alcohol, and in solution of kolatannin of sufficient concentration.

First Anhydrid.

The method of preparation has been described in the preceding section. This is a yellowish-red body, soluble in water, in alcohol, and in dilute alkali solutions. The calculated loss of weight of the tannin in preparing this anhydrid was 2.65 per cent. The observed loss of weight was 2.77 per cent. The body was subjected to combustion with the following stated results:

	Found.		Calculated for
	I.	II.	$(C_{16}H_{19}O_7)_2O$.
Carbon	58.27	58.39	58.18
Hydrogen	5.38	5.61	5.45
Oxygen	36.15	36.00	36.37

First Anhydrid of Tribrom Kolatannin.

The first anhydrid of kolatannin was dissolved in water and precipitated by adding an excess of bromin, collecting the precipitate by filtration, and drying exactly as described in the method of preparation of tribrom kolatannin. It is soluble in the same media as tribrom kolatannin, is darker colored, is odorless and tasteless. Analysis of it proved it to be an anhydrid of tribrom kolatannin.

	Found.		Calculated for
By combustion.	I.	II.	$(C_{16}H_{16}Br_3O_7)_2O$.
Carbon	33.61	33.80	33.86
Hydrogen	2.92	2.76	2.65
Oxygen	21.31	21.17	21.16
As silver salt.			
Bromin	42.16	42.27	42.33

First Anhydrid of Tetrabrom Kolatannin.

Prepared in the same way as tetrabrom kolatannin, using in this case the first anhydrid instead of kolatannin. It is hardly to be distinguished from the other tetrabrom compounds in appearance or other sensible properties. It was analysed with the following stated results:

	Found.		Calculated for
By combustion.	I.	II.	$(C_{16}H_{15}Br_4O_7)_2O$.
Carbon	29.47	29.66	29.72
Hydrogen	2.37	2.21	2.17
Oxygen	18.57	18.42	18.58
As silver salt.			
Bromin	49.59	49.71	49.53

First Anhydrid of Hexabrom Kolatannin.

This was prepared by adding a considerable excess of bromin to the alcoholic solution of the first anhydrid of kolatannin, and separating the product in the usual way. It is dark red, tasteless, and has a faint odor of bromin, it is insoluble in water, ether and chloroform; soluble in alcohol and in dilute alkali solutions. It was analysed with the following stated results:

	Found.		Calculated for
By combustion.	I.	II.	$(C_{16}H_{13}Br_6O_7)_2O$.
Carbon	23.96	24.15	23.88
Hydrogen	1.64	1.69	1.49
Oxygen	14.61	14.57	14.93
As silver salt.			
Bromin	59.79	59.59	59.70

Third Anhydrid of Kolatannin.

The method of preparation has been described. The calculated loss of weight on heating the tannin was 7.96 per cent; the observed loss was 8.16 per cent. It is a red-brown powder, odorless, nearly tasteless, but somewhat astringent. Soluble in alcohol and in alkali solutions, insoluble in water, ether and chloroform. It was analysed with the following stated results:

	Found.		Calculated for
By combustion.	I.	II.	$(C_{16}H_{17}O_6)_2O$.
Carbon	61.72	61.80	61.54
Hydrogen	5.29	5.46	5.13
Oxygen	32.99	32.74	33.33

The bromin derivatives of this anhydrid, and those of the fourth anhydrid, to be described further on in these pages, were prepared in a manner strictly analogous to those already described.

Third Anhydrid of Tetrabrom Kolatannin.

A dark brown tasteless powder having a faint obor of bromin. Insoluble in water, ether or chloroform; soluble in alcohol and in alkali solutions. The analytical results:

	Found.		Calculated for
By combustion.	I.	II.	$(C_{16}H_{13}Br_4O_6)_2O$.
Carbon	30.59	30.73	30.57
Hydrogen	1.99	1.81	1.91
Oxygen	16.32	16.19	16.56
As silver salt.			
Bromin	51.10	51.27	50.96

Third Anhydrid of Hexabrom Kolatannin.

A dark brown tasteless powder having a distinct odor of bromin. It is insoluble in water, ether and chloroform; soluble in alcohol and in alkali solutions.

The analytical results:

	Found.		Calculated for
By combustion.	I.	II.	$(C_{16}H_{11}Br_6O_6)_2O$.
Carbon	24.04	24.39	24.43
Hydrogen	1.52	1.38	1.27
Oxygen	13.22	12.88	13.23
As silver salt.			
Bromin	61.22	61.35	61.07

Fourth Anhydrid of Kolatannin.

This was prepared in the way previously described. The calculated loss of weight attendant upon its preparation from kolatannin is 10.61 percent; the observed loss was 10.78 percent. It is a dark brown, odorless, tasteless powder, soluble in alcohol and in alkali solutions; insoluble in water, in ether and in chloroform. It was analysed with the following stated results:

	Found.		Calculated for
	I.	II.	$C_{16}H_{16}O_6$.
Carbon	63.20	62.98	63.37
Hydrogen	5.09	5.16	4.95
Oxygen	31.71	31.86	31.68

Fourth Anhydrid of Tetrabrom Kolatannin.

A dark brown tasteless powder having a faint odor of bromin. Soluble in alcohol and in alkali solutions; insoluble in water, in ether and in chloroform. It was analysed with the following stated results:

	Found.		Calculated for
By combustion.	I.	II.	$C_{16}H_{12}Br_4O_6$.
Carbon	30.91	30.68	31.02
Hydrogen	1.95	1.86	1.78
Oxygen	15.40	15.58	15.51
As silver salt.			
Bromin	51.74	51.88	51.69

Fourth Anhydrid of Hexabrom Kolatannin.

A very dark brown powder having a distinct odor of bromin. Soluble in the same media as the previously described bromin compounds. The analytical results:

	Found.		Calculated for
By combustion.	I.	II.	$C_{16}H_{10}Br_6O_6$.
Carbon	24.96	24.79	24.71
Hydrogen	1.39	1.31	1.16
Oxygen	11.70	12.01	12.35
As silver salt.			
Bromin	61.95	61.89	61.78

(To be continued.)

Volatile Oils and their Assay.*

By *Edward Kremers.*

(Report of Research Committee G, U. S. P. Revision.)

Introduction.

Wherever the term "volatile oil" or its synonyms have been used by scientists, the danger of misunderstanding has on the whole been very slight. The danger, however, is greatly increased when an attempt is made to define the term. The chapters on volatile oils in numerous pharmaceutical works are prefixed by an almost meaningless definition and by an even worse classification. The authors, like many lawyers and preachers, at times evidently labor under the erroneous supposition that logic is spellbound to an arrangement into first, second and third. It is not necessary to comment on these definitions and classifications. A single sentence from the pen of an authority on the history of volatile oils, however, may be worth quoting. Flueckiger, after showing what the development of organic chemistry had done for a better conception of volatile oils, makes the following statement:

"It may be said that this advance in knowledge really annihilated the conception of 'essential oil,' which was soon demonstrated to be nothing further than a convenient general expression, incapable of clear definition.†" For the purposes of this report the general though vague conception of the class of substances known as volatile or essential oils will have to suffice. It will no doubt prove more efficient than a harnessed array of words parading under the false flag of definition.

Both the vegetable and animal kingdoms are permeated, as it were (not to be taken literally), with substances more or less volatile, or with substances which upon some form of decomposition or other may become volatile. Sometimes these substances, though difficultly volatile by themselves, are made more volatile by the presence of others. These substances, or possibly better, these mixtures of substances, can be isolated from the larger bulk of non-volatile material, non-volatile under the conditions under which the isolation is effected. This qualification is essential for two reasons, only one of which need here be emphasized, viz., that under the conditions under which the isolation is carried on certain substances originally volatile may become non-volatile.

The sum total of volatile substances isolated, generally termed the volatile or essential oil, therefore, may differ according to the process employed. For several centuries volatile oils have been prepared almost universally by distillation with water vapor. Perfumers, however, have long been aware that some of the finest aromas of flowers could not be extracted in this manner and have employed processes which excluded water as completely as possible. Although a decade since, the chemist could demonstrate no chemical difference (i. e. by chemical analysis) between an oil of lemon distilled with water vapor and a hand-pressed oil from the same fruit, the perfumer and gourmand were well aware of a great difference between the two. Although even to-day lemon oil is usually classified with the terpene oils in the systems referred to above, it is now known that the limonene largely serves as a diluent for other more odoriferous substances, principal among which is citral, an aldehyde which will not stand the rough treatment of distillation with water vapor, but polymerizes to substances devoid of the agreeable odor of the citral. Such instances might be multiplied, but a single other illustration may suffice. It is possibly to-day supposed by most pharmacists that oils containing eugenol are of value simply on account of this phenol. Inasmuch as eugenol has a high sp. gr., the higher the sp. gr. of the oil the better it is usually supposed to be. Since eugenol is but slightly if at all affected by steam, such oils are prepared by distillation with water vapor. It is also generally supposed that to distill such an oil, all that is necessary is to heat the material with water or to pass steam through the plant or part of plant containing the oil. It by no means follows, however, that the product, granting the very same crude material in both cases, will be alike. The manner in which the distillation is conducted, time of distillation, pressure of steam, etc., may have no little influence on the yield and composition of the final product. Details illustrating this point more fully will be given under their proper headings.

But we shall have to go back still farther for differences of no mean significance. It may suffice simply to recall the chemical changes that are constantly going on almost everywhere. We know that in solutions the change of a single degree in temperature may disturb the chemical equilibrium of such solutions; that a single light frost may destroy the volatile oil so-called in an entire crop of herb. The action of the atmospheralia and of parasitic organisms is even less understood. We do not even know why the plant or animal organism produces this so-called volatile oil, or even how. It has been empirically observed that dryness or moisture, hot, temperate or cold climate may increase the quantity or flavor of an oil, but even these observations have not infrequently led to false conclusions. The question why *Monarda punctata* appears always to generate thymol, and the related species *Monarda fistulosa* the chemically closely related phenol carvacrol, is a perfect mystery. Or why is it that the same plant, e. g. *Thymus vulgaris*, at times produces thymol, at other times carvacrol, or both? Why is it that the fennel plant sometimes produces largely anethol, at other times only a small amount of this phenol ether and a considerable percentage of the ketone fenchone? Our knowledge of the chemical composition of the volatile oils, in spite of the enormous strides, relatively speaking, that have been made during the last decade or two, is still so insignificant, that with increasing knowledge we may expect variations of this kind to prove the rule rather than the exception. We are just beginning to arrive at a faint conception of the subtleness of chemical changes induced by changes in mode of life or even temperament. Yet in the case of the isolation of volatile oils the life is first destroyed. A single instance may assist to emphasize this fact. In order to obtain a good rose-water, the rose-petals must be distilled at once, otherwise "fermentation" (a good word since we do not understand the chemistry of the change) takes place and ordinary alcohol is one of the products pro-

* Read in abstract at the Minnetonka meeting of the Am. Pharm. Ass'n.

† The Factories of Schimmel & Co.. Introductory text.

duced. The practical difference of note is that the oil obtained from such "fermented" rose-petals is rich in worthless paraffin hydrocarbons, indicating that some of the truely valuable substances have been converted possibly into worthless ethyl alcohol and no doubt into other substances.

In addition to these variations and changes due to differences in climate, idiosyncracies of the plant, mode of collection and process of manufacture we shall have to note another class of changes, viz. those that take place in the finished product. Such changes become apparent in differences of odor and of solubility, of sp. gr., of optical rotation, viscosity, boiling point and loss of volatility with water vapor. To illustrate these assertions by citing examples for each would lead too far. Besides, some of these changes are among those readily noticed by the observing pharmacist and therefore do not present anything new.

After this introduction we may be less inclined to define the term volatile oil, but we may nevertheless be better prepared to discuss what we may expect of a given volatile oil. Unless otherwise specified, the U. S. Pharmacopœia apparently takes it as granted that a volatile oil is prepared by distillation. Aside from variations in the plant, we have already seen that different modes of distillation can produce different oils. It may be mentioned in this connection that e. g. oil of bay and oil of cloves, as prepared by distillation by the two largest distillers of volatile oils in this country, do not come up to the required sp. gr. of the U. S. P. for reasons that will be mentioned under the respective headings. Yet if the finished product is to correspond as closely as possible to the original contents of the drug, the oils with the lower sp. gr. are the more ideal product, i. e. judged by our present knowledge. Such oils can be readily brought up to the required standard of sp. gr., either by the addition of eugenol, or by the removal of a certain constituent or constituents, which, however, appear to be characteristic for these oils. Such an oil, however, is no longer the simple oil. It has been "meddled with." Is such "meddling" lawful? If not, how is the pharmacist to obtain an oil that comes up to the U. S. P. requirement with regard to sp. gr.?

Other oils like caraway, spearmint, etc., may comply with the U. S. P. requirements when freshly distilled. Before these oils reach the dispenser, or especially on the shelves of the dispenser these oils may undergo more or less partial decomposition. The oil becomes colored, its odor has been impaired, it has formed a fair percentage of non-volatile substances. In order to get around these difficulties in part, the manufacturer rectifies the oil, indeed rectifies it several times. The final product for most practical purposes is an improvement over the crude oil, but is no longer the ideal (in the sense of natural) oil. During the repeated distillations the less stable substances have been decomposed and have remained behind. If oil of caraway pure and simple is the oil required by the Pharmacopœia, is the pharmacist justified in dispensing a modified product though this may be considered an improvement by some or even by most persons?

Let us go a step farther. Oil of peppermint contains a large variety of substances. Over twenty substances belonging possibly to half a dozen classes of chemical compounds have already been isolated and identified. To no small extent the oil is distilled by farmers who sell the oil to intermediates. When American oil was high in price, Japanese oil has been added. But Japanese oil is a poor adulterant on account of the bitter taste apparently readily recognized by connoisseurs. However, menthol from Japanese oil is the same as that from American or any other oil. If the sp. gr. of the American oil for one reason or another happens to be low, it can be raised by the addition of menthol. No doubt, most persons would regard this as an improvement, but are even improvements justified when not prescribed?

There is another way in which peppermint oil can be improved and even more effectually. Besides menthol, menthone, menthyl esters and certain hydrocarbons American peppermint oil, at least sometimes, contains some of the lower fatty aldehydes and even dimethyl sulphide, a perfect stench when not greatly diluted by the other more abundant constituents of the oil. These malodoriferous substances can readily be removed by rectification or fractional distillation with steam. Such a rectified oil will very likely have a higher sp. gr.; will contain a greater percentage of menthol, possibly also of menthyl esters; and will be more soluble in alcohol. Is such an oil, which has been "meddled with," though improved, justified before the law? It is not at all improbable that most peppermint oils have been "meddled with" in some such manner after their first distillation, but very likely in most cases no one but the "meddler" can prove it.

Let us take a somewhat different case. Pharmaceutical journals have repeatedly published methods and working formulas according to which resinified and "terebinthenated" specimens of oil of lemon could be corrected. The processes almost invariably if not always involved distillation with water vapor. Now it has long been known that oil of lemon prepared by distillation is inferior to the hand pressed oil. Whereas ten years ago the chemist could not explain this difference, he can at least in part explain it to-day. Such a rectified oil may be a temporary partial improvement over the deteriorated oil, but it is not likely to come up to the original standard in quality. Is such so-called improvement justifiable?

This illustration leads to another point to be considered. For some years so-called quintessential and terpeneless oils have been introduced into the market. After the discovery of a considerable number of oxygenated compounds in oils the belief has been more or less generally currant that only these were essential and that the hydrocarbons present, the so-called terpenes, were but diluents and could be discarded if inconvenient. Thus a more or less pure carvone fraction is supposed to contain all the virtues of caraway oil, as a certain fraction of lemon oil rich in citral is substituted for the entire oil. The advantage of such quintessential oils to liquor manufacturers may not be questioned, but is the pharmacist justified in dispensing them when the oil as such is prescribed? Any person familiar with the chemistry of caraway oil knows that carvone and limonene are not the only constituents of caraway oil. No other substances have been reported as having been isolated from spearmint oil. Why not permit the substitution of spearmint oil for caraway oil, or of quintessential spearmint oil supposed to be principally carvone for quintessential caraway oil, almost pure carvone?

To go one step farther, the question now suggests itself, is the substitution of anethol for anise oil to be permitted? If it is, why should its substitution for fennel oil not also be permitted? The difference in the two cases is not so much one of principle but of degree.

It might do no harm if in the present days of food and drug laws the Pharmacopœia were somewhat more specific on these points. There is no reason why in certain cases rectified or otherwise improved oils should not be preferred to crude oils, why definite chemical substances, such as anethol, eugenol, cineol, menthol should not be used to great advantage. But it does not appear right to the writer that one should be substituted for the other, any more than an alkaloid may be substituted for the crude drug or a pharmacopœial preparation of such a drug; or why a tincture prepared from a fluid extract should be permitted to be dispensed as long as the Pharmacopœia requires such tincture to be prepared directly from the drug; or why a fluid extract prepared with a different menstruum than that of the U. S. P. should be permitted to be substituted for one of the U. S. P., no matter what superiority the manufacturer may claim for his method of preparation.

Although morphine and quinine were introduced early in the century, the closing years of the present cycle still witness the very frequent use of the respective crude drugs or their galenical preparations. If definite chemicals could be used generally in place of crude drugs and galenicals, medicine and pharmacy would be simplified even more than they are to-day. The temptation to overdo matters in this direction is very great and modern scientists have sinned greatly by assuming an air of knowing it at all if they knew but a single fact. We have witnessed the going into disuse of standard preparations by making them quasi scientific.

Admitting then that our present knowledge is but the dot on the i, how are we to know what to expect of a volatile oil? All that we can do, in fact, all that we ever shall be able to do is to judge these products by our most advanced knowledge of them. There was a time when the oils were judged simply by their odor, color and taste. In fact these are important criteria to-day to the connoisseur. This favored gentleman may distinguish readily between true wintergreen oil from *gaultheria* and so-called wintergreen oil from the sweet birch by the odor. He will classify his samples accordingly and verify his sensory analysis with the use of the polariscope. But most persons are not favored with such an analytic sense of smell.

Later sp. gr. was introduced as a valuable criterion. But as it became known that equally authentic oils might differ considerably in sp. gr., that the same specimen could materially change its sp. gr. upon standing, and that the adulterer found it very easy to make contaminated oils come up to the required standard of sp. gr., this standard by itself lost considerable of its former significance.

Other physical constants were determined and each hailed as a new check upon adulteration and fraud, yet not one finds as general application in actual practice as the sp. gr. test. The test of solubility in alcohol, especially somewhat diluted alcohol, is gaining favor. But too little is at present known to make it reliable in any more than a very limited number of cases. An oil perfectly soluble to-day may be imperfectly soluble to-morrow. No general rules can be laid down and much experimentation will be necessary before the real value of this test will be known.

Tests of a chemical nature were initiated in the form of color reactions with strong acids etc. The historic iodine test for turpentine oil will, no doubt, be remembered by many. Volumes have been written on this subject and some of them were relegated to the archives as soon as they issued from the printer's press to be disturbed only as curiosities.

The strictly chemical study of volatile oils during the last fifteen or twenty years, which, to use Flueckiger's words once more, "really annihilated the conception of volatile oils," is preparing the way for a better understanding of these interesting products and incidentally also for the examination and assay of commercial articles. For the benefit of those who have no use for that which is scientific, but glory in the practical, let it be stated that a few theorists at German universities and a factory that employs doctors of philosophy instead of volatile oil apprentices have done more for a more rational understanding of this subject than all pharmacists of all countries during the entire past century.

Let it be understood that the way is not already prepared, but is being prepared. Although on the right path, we are but at the beginning of a road by no means easy of travel at present.

The strictly chemical study of the volatile oils which has proven so fruitful during the past decade and a half will have to be made the basis for the rational examination of volatile oils. Inasmuch as at present so little is known about the chemical composition of volatile oils, all that can be done at present is to test for certain constituents, whether these be characteristic of the oil or not. These may best be grouped chemically in the ordinary manner: Hydrocarbons; alcohols (incl. phenols), ethers (incl. phenol ethers) and the corresponding thio alcohols (mercaptans), and thio ethers (e.g. dimethyl ether); aldehydes and ketones; acids (incl. lactones) and esters.

Popular Scandinavian Names of Drugs and Medicines.

By *Harold Bruun.*

Aconit urt,	Aconite herb.
" tinctur,	" tincture.
Aegte Kanel,	Ceylon cinnamon.
Aetskali,	Caustic potash.
Aetsnatron,	" soda.
Afförende latvaerge,	Confection of senna.
" pulver,	Compound licorice powder.
Agurk,	Cucumber.
" vild,	Wild cucumber.
Alantrod,	Elecampane.
Albark,	Álnus (Alder bark).
Alkohol,	Alcohol.
" Ethyl,	Ethyl alcohol.
" Methyl,	Methyl alcohol.
Allehaande (eller piment),	Allspice.
Alruna,	Mayapple.

Altheasaft,	Syrup of Althæa.
Alun,	Alum.
" ammoniak,	Ammonia alum.
" kali,	Potassium alum.
Alunrod,	Alum root.
Amerikansk Braekrod,	Ipecac root.
" Enzianrod,	Gentian root.
" Feberurt,	Fever root.
" Olje,	Castor oil.
" Ormefrö,	Worm seed.
" Pinkrod,	Pink root.
" Senna,	American senna.
Ammoniak,	Ammonia water.
" Baldriansurt,	Ammonium valerianate.
" Brom,	Ammonium bromide.
" Chlorsurt,	Ammonium chloride.
" Gummi,	Gumresin ammoniac.
" Jod,	Ammonium iodide.
" Kulsurt,	Ammonium carbonate.
" Phosphorsurt,	Ammonium phosphate.
Anis,	Anise.
Anisfrö,	"
Anisdraaber,	Camphorated tincture of
Anisvand,	Anise water. [opium.
Apelsin (see pomerants),	Orange.
" skaller, bitre,	Bitter orange peel.
" " söde,	Sweet " "
Arabisk gummi,	Gum Arabic.
Aralia nudicaulis,	False sarsaparilla.
Arekanödder,	Areca nut.
Aromatisk edike,	*Acetum aromaticum.*
" tinctur,	Aromatic tincture.
Arrow mel,	Arrow root.
Arnica blomster,	Arnica flowers.
" Tinctur,	Tincture of arnica.
Arsensyrling (hvid arse-	Arsenious acid.
Arsenicjod, nik),	Arsenic iodide.
Asktrae,	White ash.
Atropin, svovlsurt,	Atropine sulfate.
Baevergjael,	Castoreum.
" tinctur,	Tincture of castoreum.
Baldrian rod,	Valerian root.
" surt ammoniak,	Ammonium valerianate.
" " Chinin,	Quinine valerianate.
" " jernoxid,	Iron valerianate.
" " natron,	Sodium valerianate.
" " Zinkoxyd,	Zinc valerianate.
" olje,	Oil of valerian.
Balsam kopaiva,	Copaiva balsam.
" tolu,	Tolu balsam.
Bankebyg,	Pearl barley.
Bark Angustura,	Angustura bark.
" Bomuldrod,	Cotton root bark.
" Brombaerrod,	Blackberry bark.
" China,	Peruvian bark.
" " graa,	" " , pale.
" " gul,	Calisaya bark.
" " konge,	" "
" " röd,	Red Peruvian bark.
" Ege,	Oak bark.
" Elmetrae,	Slippery elm bark.
" Granataeblerod,	Pomegranate root bark.
" Hestekastanie,	Horsechestnut bark.
" Kaaltrae,	Cabbage tree bark.
" Kaskarille,	Cascarilla bark.
" Kirsebaer, vild,	Wild cherry bark.
" Mangostane,	Mangosteen.
" Piletrae, hvid,	Willow bark.
" Saebeurt,	Soap bark.
" Törstetrae,	Frangula bark.
Barnepulver,	Compound rhubarb pow-
Beg, burgundisk,	Burgundy pitch. [der.
Beg, sort,	Black pitch.
Belladonna blade,	Belladonna leaves.
" rod,	" root.
Beenved,	Privet.
Bengalisk kvaede,	Bael fruit.
Bensort,	Animal charcoal.
Benzoesyre,	Benzoic acid.
Benzoegummi,	Benzoin.
Benzoelaurbaerbusk,	"
Benzoesurt ammoniak,	Ammonium benzoate.
Berberin, svovlsurt,	Berberine sulphate.
Berberisbusk bark,	Barberry bark.
Bergamot olje,	Oil of bergamot.
Berlinerblaat,	Iron ferrocyanide.
Bertramblomster persisk,	Persian insect flowers.
Bertramrod,	Feverfew.
Betelnödder,	Areca nut.
Bibirubark,	Nectrandra.
Birk,	Birch.
Bitter mave chaaber,	Bitter stomach drops.
Bittermandel,	Bitter almonds.
" olje,	Oil of bitter almonds.
" vand,	Bitter almond water.
Bitterjord,	Manganese sulphate.
" the,	*Species amaræ.*
" tinctur,	*Tinctura amara.*
Bittersalt,	Magnesium sulphate.
Bittersöd,	Bittersweet.
Bitre rhabarberdraaber,	*Tinctura rhei amara.*
Blaaklokke,	*Centaurea cyanus.*
Blaasyre,	Hydrocyanic acid.
" kali,	Potassium cyanide.
" natron,	Sodium cyanide.
" kviksölv,	Mercury cyanide.
Blaabaersyrup,	Syrup of blue berries.
Blade Belladonna,	Belladonna leaves.
" Boldo,	Boldo leaves.
" Bucco,	Buchu leaves.
" Bukke,	Buckbean.
" Bulmeurt,	Henbane leaves.
" Fingerbölle,	Foxglove.
" Hestemynte,	Horsemint.
" Hesthov,	Colts foot (*tussilago*).
" Kastanie,	Chestnut leaves.
" Kirselaurbaer,	Cherry laurel leaves.
" Koka,	Coca leaves.
" Karbendikt,	Blessed thistle.
" Kornvalmue,	Red poppy petals.
" Krusemynte,	Curled mint.
" Laurbaer,	Laurel bay leaves.
Blade Matico,	Matico leaves.
" Melbaer,	Uva ursi leaves.
" Melisse,	Lemonbalm.
" Mynte, romersk,	Spearmint.
" Pebermynte,	Peppermint.
" Pigaeble,	Stramonium leaves.
" Rosen, blegröde,	Pale rose leaves.
" " mörkeröde,	Red rose leaves.
" Salvie,	Sage.
" Sennes,	Senna leaves.
" Sesame,	Benne leaves.
Blodigle,	Leech.
Blodrensende Urter,	*Spec. emollientes.*
Blodsten,	Haematite.
Blodurt,	Tormentilla.
Blaa vitriol,	Copper sulphate.
Bly edike,	Solution of lead subace- tate.
Bly hvidt,	Lead carbonate.
" oxyd,	Lead oxide.
" plaster,	Lead plaster.
" vand,	Lead water.

Bly salve,	Ointment of lead acetate.
" jod,	Lead iodide.
" salpetersurt,	Lead nitrate.
" sukker,	Sugar of lead (Lead acetate).
Blyant,	Graphite.
Boccoblade,	Buchu leaves.
Bolus, hvid,	Bole.
Boldo blade,	Boldo leaves.
Bomolje,	Olive oil.
Bomuld,	Cotton.
Bomuldrodbark,	Cotton root bark.
Borsurt ammoniak,	Ammonium borate.
" natron,	Borax.
Borrerod,	Bardanna root.
Braendt alun,	Burnt alum.
" gyps,	Plaster of Paris.
" kalk,	Calcium oxide.
" magnesia, let,	Burnt magnesia.
" " tung,	Heavy magnesia.
" sukker,	Caramel.
Braendenesle,	Nettle.
Braekrod,	Ipecac root.
" vin,	Wine of ipecac.
Braekvinsten,	Tartar emetic.
Bregnerod,	Male fern.
Brom,	Bromine.
Bromalhydrat,	Bromal.
Bromammonium,	Ammonium bromide.
Bromkali,	Potassium bromide.
Bromnatron,	Sodium bromide.
Bromjern,	Iron bromide.
" jod,	Iodine bromide.
" kalcium,	Calcium bromide.
" lithium,	Lithium bromide.
Brombaerrodbark,	Blackberry bark.
Bromvandstofsyre,	Hydrobromic acid.
Bromzink,	Zinc bromide.
" aethyl,	Ethyl bromide.
Brunelle,	Heal all.
Brunsten,	Black oxide of manganese.
Brystbaer,	Jujube berries.
Brystdraaber,	*Liq. pectorales.*
Brystthe,	*Spec. pectorales.*
Bruspulver,	*Pulv. effervescens.*
" afförende,	" " *comp.* (Seidlitz powders).
Bröd, Johannis-,	St. Johns bread.
Bringebaer,	Raspberries.
" syrup,	Syrup of raspberries.
Bukkehornfrö,	Fenugreek seed.
Bukkeblade,	Buchu leaves.
Bukkeskjaeg,	Goats beard.
Bulmeurt blade,	Henbane leaves.
" olje,	Oil of henbane.
Bygmalt,	Barley malt.
Cajeput olje,	Oil of cajeput.
Campher draaber,	*Aether spirt. camphor.*
" mixtur,	*Mixt. camphor.*
" " sure,	*Mixt. camphor acid.*
" olje,	Camphorated oil.
" spiritus,	Camphor spirit.
" olje, hvid,	Camphor liniment.
Campechtrae,	Logwood.
Canadisk erigeron olje,	Erigeron oil.
" the,	Wintergreen.
" " olje,	Wintergreen oil.
Cannastivelse,	Canna starch.
Copaivabalsam,	Capaiba balsam.
Carbolsyre,	Carbolic acid.
Carbolvand,	Solution of carbolic acid, 3%.
Cardemome,	Cardamom.
Cathartinsyre,	Cathartic acid.
Cedertrae, röd,	Red cedar.
Charpi, engelsk,	Lint.
Chinin,	Quinine.
" baldriansurt,	" valerianate.
" chlorsurt,	" hydrochloride.
" svovlsurt,	" sulphate.
China Decoct,	*Decoct calisayæ.*
" " surt,	" " *acidum.*
" vin,	Wine of calisaya.
Chlorjern,	Iron chloride.
" draaber,	Tincture of chloride of iron.
" oplösning,	Solution of chloride of iron.
Chlorsurt kali,	Potassium chlorate.
" natron,	Sodium chlorate.
Chlorkalk,	Chlorinated lime.
Chlorvandstofsurt chinin,	Quinine hydrochloride.
" morphin,	Morphine hydrochloride.
" zinc,	Zinc hydrochloride.
Chlorvandstofsyre,	Hydrochloric acid.
" fortyndet,	" " dilute.
Chlorzink,	Zinc chloride.
Chocolade,	Chocolate.
Christtorntrae,	Holly.
Citron,	Lemon.
Citronsaft,	Lemon juice.
Citronolje,	Oil of lemon.
Citronsyre,	Citric acid.
Citronsurt jernoxyd,	Iron citrate.
" " ammoniak,	Iron and ammonia citrate.
" " chinin,	Iron and quinine citrate.
" kali,	Potassium citrate.
" natron,	Sodium citrate.
Cocao smör,	Cocao butter.
Cocao bönner,	Cocao beans.
Colchicum vin,	Wine of colchicium.
Cochenille,	Cochineal.
Colokvint,	Colocynth.
" tinctur,	Tincture of colocynth, compound.
Columbo rod,	Columbo root.
Cyan kali,	Potassium cyanide.
" natron,	Sodium cyanide.
" sölv,	Silver cyanide.
" kviksölv,	Mercury cyanide.
" zink,	Zinc cyanide.
Cammomille blomster,	Chammomile flowers.
" " romersk,	Roman chammomile.
Decoct Asketraebark,	Decoct. of white ash.
" China,	" of calisaya.
" " surt,	" of calisaya, acid.
" Lövetand,	" of taraxacum.
" Sennes blade,	" of senna leaves.
Desmer,	Musk.
Dialyseret jern,	Dialysed iron.
Digitalisblade,	Digitalis leaves.
Dill,	Dill.
Dillolje,	Oil of Dill.
Dipelsolje,	Animal oil, Dippel's.
Ditabark,	Ditabark.
Donovans Oplösning,	Donovan's solution.
Drageblod,	Dragons blood.
Dugurt,	Sun dew.
Dyvelsdraek,	Asafetida.
" draaber,	Tincture of asafetida.
Dustepulver,	Lycopodium.
Edike aether,	Acetic ether.
Edikesyre,	Acetic acid.
Edikesurt blyoxyd,	Lead acetate.

(To be continued.)

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.

By *Edward Kremers.*

For several years past the writer has spent odd hours of his summer vacations in seeking information with regard to a fragment of Wisconsin's history that ought not to be devoid of interest to the pharmacist or to the student of the history of our institutions. Pharmaceutical legislation has become an established fact in Wisconsin as well as in most states of the Union. Yet there was a time when the regulation of the practice of pharmacy in Wisconsin as well as elsewhere was fought tooth and nail. Strange as it may seem at first, and yet only naturally, when understood, the pharmaceutical legislation demanded by some was combatted by legislation of similar though less exclusive character on the part of others and thus were inaugurated the first laws regulating the practice of pharmacy in Milwaukee. These laws soon proved the steppingstone to legislation for the entire state.

National Museum at Nuremberg.
(The home of the German historic pharmacy.)

The writer does not claim competency to write history, yet in this case he does not apologize for entering upon a field that does not fall within the domain of his specialty. Pharmacy has commercialized to such an extent that even the well trained pharmacist seems to have no time left to write the history he has helped to make. The general historical student, on the other hand, has so many problems of greater interest to him that he possibly is not even aware of the movement to which the writer desires to call attention.

Those who took a more or less active part in this movement seem to have forgotten largely about it, while others who might give information have died. The object in presenting this paper is to revive, if possible, an interest in a very short period of our pharmaceutical history, which certainly is unique. It is to be hoped that a somewhat connected statement of what excited not only the minds of pharmacists, but of newspaper editors and other writers as well, will bring back to memory facts that are still necessary to throw a better light on the period that ultimately gave birth to our state pharmacy act.

It would, no doubt, be of interest to review, as well as is possible at present, the early history of the drug business and of pharmacy in this state from the time when Mr. King is said to have opened the first drugstore west of Detroit, viz. in Green Bay, or when Mr. Higby hung out his sign as druggist on East Water Street in Milwaukee in 1836. Such a review might lead to a better understanding of the subject to be presented, but it will have to be omitted at present. The facts, to which the writer desires to call special attention at the present time, do not smack simply of a local flavor, but are not altogether devoid of what the Germans designate by "culturhistorisches Interesse."

As is well known, Milwaukee received a large number of German immigrants from the fifties on. Among these were not only ordinary laboring men, but men well trained in the trades, teachers, physicians and apothecaries. As can be seen from a perusal of the city directories, the last class mentioned must in the course of time somewhat have changed the complexion of the original pioneer drug-trade. In 1875, the year in which our story

begins, there were forty druggists or pharmacists in Milwaukee, thirty of whom were either Germans or German-Americans. As to the exact status of the pharmaceutical training of these men nothing very definite can be mentioned at present. Suffice it to call attention, on the one hand, to the fact that but very few men were warranted in calling themselves "deutscher Apotheker" in any other than the conventional American sense.

The title "Apotheker" in Germany implies a course of technical training and study covering a period of eight years and the passing of a state board examination. It is the legal equivalent of our licentiate grade of registered pharmacists. Many who came over from the fatherland had only a part of this training. On the other hand, it should be emphasized that their training at the Gymnasium, and as apprentices and assistants in well equipped pharmacies and under educated men, compared very favorably with the education and training of the average Milwaukee druggist previous to their advent.

That these men should have been displeased with the state of affairs is but natural. Medicine was in an equally deplorable condition and cases of poisoning through ignorance or negligence were by no means unknown. Individual efforts to secure a correction of the conditions which were so graphically described by several of their number, as will be shown later, were of no avail. The Milwaukee representatives at the State Legislature either flatly refused to have anything to do with the matter or said it would be of no avail to make an attempt because it would be construed as "class-legislation" by the general public and on account of the opposition it would meet with on the part of the druggists in the smaller towns of the interior.

Things seemed to go from bad to worse. Correction through state legislation seemed impossible at least for the time. The next best thing, therefore, was to effect an organization of those who had the wellfare of their calling at heart and to ultimately accomplish through education and organized effort that in which the individual failed.

This sentiment crystallized in an invitation extended by Mr. Johannes Kienth to a small number of personal friends and acquaintances to meet at his drug store corner Third and Sherman Sts. A meeting was held, Mr. Kienth was elected temporary president and Mr. Fr. Roehmheld temporary secretary, and the situation was discussed informally. An incomplete programme was arranged and the secretary was instructed to make the same known through the daily papers and to invite all who were qualified according to the temporary programme to appear at a meeting to be held the following Monday at the St. Charles Hotel. This meeting apparently was never held, but at the time at which this meeting was to be called to order a petition asking for pharmaceutical legislation was read at the meeting of the Common Council. Strange as it may seem at first sight this petition was not signed by a single one of the persons who were present at Mr. Kienth's store and who had made known to the citizens of Milwaukee their intention to improve the condition of pharmacy in that city.

The explanation is simply this. Mr. Roemheld made his report, as requested, in the "Seebote." [*Document 1.*] The editor, under the heading of "Tageschronik," comments semi-editorially on the new movement. Although he disowns any responsibility for the style in which the communication was written, he on the whole comments favorably on the organization of the new Milwaukee Pharmaceutical Society and its good intentions. [*Document 2.*] Other German papers were requested to take notice of the communication, which was done by the "Banner" [*Document 3.*] and by the "Germania" [*Document 4.*]. The "Evening Wisconsin" also took notice of this meeting [*Document 5.*], whereas the "Sentinel" apparently did not. This communication seems to have attracted considerable attention on the part of druggists as well as others. More information seems to have been called for and this was supplied officially by Mr. Kienth in the "Herold" on the following Friday, Sept. 17. [*Document 6.*] With the aid of a drastic illustration, attention is called to the reckless manner in which persons are allowed to practice pharmacy. This is to be changed as far as the members of the new organization are concerned. They are to have a reasonable education and training or should have had at least fifteen years of experience as prescription druggists. It is also clearly stated that the society hopes to establish a school with competent teachers.

Document 1.

[*Seebote*, Dienstag d. 14. Sept. 1875. (p. 4, col. 6.)]

(Eingesandt).

Bei der gestrigen Versammlung der prominentesten deutschen Apotheker Milwaukee's, Zwecks zum Schutz des Publikums Missgriffen und fahrlässigen Verkauf von Seiten nicht wissenschaftlich gebildeten Apothekenbesitzern und Gehülfen und den dadurch gefährdeten guten Ruf des Apothekerstandes zu schützen, wurde einstimmig der Beschluss gefasst, sich zu korporiren unter dem Namen "Milwaukee Pharmaceutical Society" und protempore zur Wahl der Beamten geschritten.

Gewählt wurden als Präsident: J. Kienth,
als Sekretär: Fr. Roemheld.

Der Verein macht sich zur Pflicht das Publikum gegenüber durch Unwissenheit und Fahrlässigkeit entstehende Missgriffe, durch Regelung des Verkaufs von starkwirkenden und gefährlichen Drogen zu schützen durch nur Anstellung von wissenschaftlich gebildeten und examinirten Gehülfen, Hebung der pharmaceutischen Interessen durch festes einiges Zusammenhalten unter sich und Regelung der Verhältnisse der Prinzipale und Lehrlinge resp. Gehülfen zu einander herbeizuführen.

Mitglieder des Vereins können solche werden die ein Examenzeugniss eines Staatscolleges oder einer dazu autorisirten Commission Americas oder irgend eines auswärtigen Staates nachweisen oder den Beweis führen können einer fünfzehnjährigen absoluten Recepturthätigkeit.

Der Verein ladet hiermit alle die Herrn Apotheker die nach den oben erwähnten Paragraphen einzutreten berechtigt sind, freundlichst ein sich zu betheiligen und bei der am Montag den 20. hujus stattfindenden Versammlung im Grand Central Hotel zu erscheinen.

Im Namen des Vereins, Otto A. Thiele
C. Annecke
Rud. Wiese
J. Kienth, Präs.
Wm. Ritmeier
Louis Meyer
Fr. Roemheld, Secret.
Aug. v. Trott
Fr. Ladwig
F. Niedecken.

Deutsche Blätter wollen gef. kopiren.

Document 2.

[*Seebote*, Dienstag d. 14. Sept. 1875. (p. 4, col. 1.)]

Verein der hiesigen Apotheker.

Wie unsere Leser aus einem "Eingesandt" an anderer Stelle ersehen (für dessen Stylisirung die Redaktion des

„Seebote" jedoch nicht verantwortlich ist), hat sich gestern Abend eine Anzahl unserer prominentesten Apotheker zu einem Verein konstituirt, welcher den lobenswerthen Zweck verfolgt, das Publikum gegen Missgriffe ungehörig gebildeter Apothekergehülfen zu schützen und in den hiesigen Apotheken nur Gehülfen zu beschäftigen, die über eine fachmännische Ausbildung genügende Zeugnisse vorlegen können. Dieser Zweck verdient gewiss alle Anerkennung und das Publikum wird gewiss die Entstehung eines solchen Vereins mit Freuden begrüssen. Wenn wir in Milwaukee und im Allgemeinen nicht grossen Grund haben, über den Mangel an fachmännischer Bildung seitens unserer Apotheker Klage zu führen, da unsere Apotheken meist sich in Händen von tüchtigen deutschen Apothekern befinden, so verdient dieser neuer Schritt immerhin das grösste Lob, indem das Publikum durch eine derartige Organization um so wirksamer gegen etwaigen Schaden geschützt wird. Und in welchem Geschäft sollte mit mehr Vorsicht verfahren werden, als gerade in der Apotheke?

Dieser Schritt unserer Apotheker verdient in allen grösseren Städten in unserem Staate und ausserhalb desselben Nachahmung und wird dieselben zweifelsohne mit der Zeit zur Folge haben.

Der Verein wird sich gesetzlich inkorporiren lassen und hat den Namen "Milwaukee Pharmaceutical Society" angenommen.

Document 3.

[*Banner und Volksfreund*, Mittwoch d. 15. Sept. 1875 (p. 4, col. 4.)]

Die Apotheker organisiren sich.

Am Dienstag hielten eine Anzahl hiesiger Apotheker eine Versammlung, in welcher ein Apothekerverein gegründet wurde.

Der Verein bezweckt, das Publikum gegen Missgriffe beim Verkauf von Medikamenten zu schützen und als Gehülfen in den zum Verein gehörigen Apotheken nur geprüfte Leute anzustellen. Der Verein nahm den Namen „Milwaukee Pharmaceutical Society" an und erwählte zeitweilig die folgenden Beamten:

Präsident — J. Kienth,
Secretär — Fr. Roemheld.

In dem uns zur Veröffentlichung übergebenen Berichte heisst es weiter:

Der Verein macht es sich zur Pflicht, das Publikum gegen Unwissenheit und Fahrlässigkeit beim Verkaufe von starkwirkenden Droguen zu schützen, die Hebung der pharmacentischen Interessen durch festes einiges Zusammenhalten unter sich und Regelung der Verhältnisse der Prinzipale und Lehrlinge, resp. Gehülfen zu einander herbeizuführen.

Mitglieder des Vereins können Apotheker werden, die ein Examenszeugniss eines Staatscolleges oder einer dazu authorisirten Commission Amerikas oder irgend eines auswärtigen Staates nachweisen oder den Beweiss über eine fünfzehnjährige absolute Recepturthätigkeit beibringen können.

Der Verein ladet hiermit alle die Herren Apotheker, die nach den oben erwähnten Paragraphen einzutreten berechtigt sind, freundlichst ein, sich zu betheiligen und bei der am Montag den 20. d. stattfindenden Versammlung im Grand Central Hotel zu erscheinen.

Im Namen des Vereins.

[Same signatures as under Document 1.]

Document 4.

[*Germania*, Mittwoch, 15. Sept., 1875. (p. 3, col. 5.)]

Die deutschen Apotheker haben einen Verein unter dem Namen „Milwaukee Apotheker-Verein" gegründet.

J. Kienth wurde zum Präsidenten und Fred. Roemheld zum Secretär ernannt. Zweck des Vereins ist, Schutz des Publikums vor Unwissenheit und Sorglosigkeit bei dem Verkaufe gefährlicher Medizinen und Aufstellung von Bestimmungen, welche für Apotheker und deren Gehülfen von Nutzen sind. Mitglieder des Vereins sind die Herren Otto A. Thiele, C. Annecke, Rud. Wiese, J. Kienth, Wm. Rittmeier, Louis Meier, Fred. Roemheld, Aug. v. Trott, Fred. Ladwig und Franz Niedecken.

Document 5.

[*Evening Wisconsin*, Wednesday, Sept. 15, 1875. (p. 4, col. 1.)]

German Druggists.

A meeting of the German druggists of the city was held last evening. J. Kienth was selected President and F. Roemheld Secretary. Among those present were: Otto A. Thiele, C. Annecke, Rudolph Wiese, J. Kienth, William Ritmeier, Louis Meyer, Frederick Roemheld, August von Trott, Frederich Ladwig and Frederick Niedecken.

The association is to be known as the "Milwaukee Pharmaceutical Society" and has for its object the protection of the public against ignorance and carelessness, and to provide rules for the benefit of druggists and their assistants. The next meeting is to be held at the Grand Central Hotel next Monday evening.

Document 6.

[*Herold*, Freitag d. 17. Sept. 1875. (p. 3, col. 6.)]

(Eingesandt).

Die mir vielfach zugehenden Anfragen von Apothekern wie Laien, die Intentionen der Milwaukee Pharmaceutical Society betreffend, mögen im Folgenden ihre Beantwortung finden:

Es ist der feste Entschluss des Vereins, die Paragraphen seiner Constitution mit eiserner Consequenz durchzuführen. Es kann dabei weder vom einem Puppenspiel noch von einer Geschäftsreklame die Rede sein.

Hier gilt es das Wohl und Wehe unserer Mitbürger. Mögen die Dummen, die nie alle werden, am Geldbeutel sich schädigen lassen, so viel sie wollen, das verhindern zu wollen ist eine Unmöglichkeit, denn gegen Dummheit kämpfen selbst Götter vergebens. Die Gesundheit aber soll nicht mehr ein Opfer betrügerischer, habgieriger Unwissenheit sein. Dass der Verein den Nachweis eines bestandenen Examens verlangt, ist sehr in der Ordnung. Dass der Verein auch eine Examinations-Commission zur Prüfung etwaiger sich meldender Candidaten einsetzen wird ist selbstverständlich. Dass auch Apotheker, die eine absolute fünfzehnjährige Receptur Thätigkeit hinter sich haben, als Mitglieder aufgenommen werden können, ist gewiss einem Jeden einleuchtende, gerechte und billige Nachsicht, den älteren, erfahrenen Apothekern gegenüber, denn eine fünfzehnjährige Praxis giebt dem Publikum eine genügende Garantie für die Befähigung des Apothekers.

Es ist ferner die etwas weiter liegende Absicht, eine pharmazeutische Schule mit dem Verein zu verbinden, und werden die geeigneten Lehrkräfte für die einzelnen Fächer sicher gefunden werden, da tüchtige Fachleute, gediegene Aerzte und gewandte und gebildete Techniker dazu erkoren werden sollen. Vorauszusehen war wohl ein Wehgeschrei, ein Wuthgebeul vieler pharmazeutischer Freibeuter, die leichtsinnig genug ein so verantwortliches Geschäft auf ihre Schultern genommen haben.—

Wie schauderhaft leichtsinnig viele dieser sich Apotheker nennenden Geschöpfe in's Geschirr gehen, beweise folgende Thatsache.—

Ein junger Mann kommt in die Apotheke eines renommirten Apothekers mit den Worten: „Say, sind sie der Boss?" „Ja, ich habe die Ehre." „Say, wie lange thät's mich nehmen, den Trade zu lernen?" „Wenn Sie fleissig sind zum mindesten 3 bis 4 Jahre." „Ach was, ich will selbst einen Store anfangen. Ich denke in 4 bis 6 Monaten kenne ich all die Bottles und kann auch Prescriptions machen." Sagte es und verschwand und in 6 Monaten hatte er richtig seine Apotheke. Wo, was, und wie viel er gelernt, darüber schweigt des Sängers Höflichkeit.

Ich könnte solcher Beispiele mehrere anführen, glaube aber, dass eines genügt, das Publikum davon zu überzeugen, dass Abhülfe der bestehenden Misstände dringend geboten sei. Johannes Kienth.

(To be continued.)

Chemical Bibliography of Morphine. 1875—1896.

By *H. E. Brown*, B. S.*

[In this bibliography it is undertaken to index original articles making record of real chemical research, and to outline the scope and result of each investigation. The outlines or abstracts have been made by Mr. Brown from the original publications, in all cases except where the paragraph is marked with a star. For the convenience of workers who need the original in full, but have access only to limited libraries, citations are given to as many republications of an article as practicable, the first citation indicating the original publication. The arrangement of the bibliography itself is chronological as far as possible, with the provision of an index of authors and one of subjects.

The chemical literature of morphine is especially difficult to compass, both as to analytical method and as to chemical structure. In both of these respects, also, morphine is a representative of related alkaloids. For these reasons the publication of the bibliography seems to be justified. *A. B. Prescott.*]

List of Periodicals consulted.

The following periodicals were examined carefully for articles upon the subject of the bibliography, in each case, from the year 1875 to the end of 1896:

Journal of the Chemical Society.
Berichte der deutschen Chemischen Gesellschaft.
Bulletin de la Société chemique de Paris.
Chemische Centralblatt.
Pharmaceutical Journal and Transactions.

The following were consulted upon references:

Annalen der Chemie (Liebig).
Comptes rendus de l'Académie des Sciences.
Journal of the American Chemical Society.
American Chemical Journal.
Archiv der Pharmacie.
Journal für praktische Chemie.
Annales de Chimie et de Physique.
Chemical News.
Zeitschrift für analytische Chemie.
Deutsche Chemiker-Zeitung.
Pharmaceutische Centralhalle.
Gazzetta chimica italiana.

Beckett. G. H., and Wright, C. R. A. 1875.
J. Chem. Soc. 13, p. 15; Ber. 7, p. 1651.
Action of Organic Acids and their Anhydrides on the Natural Alkaloids.

When anhydrous morphine is heated to 130° for five or six hours with twice its weight of butyric acid, a reaction occurs exactly similar to that produced with acetic acid, $C_{34}H_{38}N_2O_6+2(C_4H_7OOH)=2H_2O+C_{34}H_{36}(C_4H_7O)_2N_2O_6$. In this reaction a non-crystalline and a crystalline base are formed at the same time, which are in all probability α- and β-dibutyryl morphine respectively.

Beckett, G. H., and Wright, C. R. A. 1875.
J. Chem. Soc. 13, p. 20; 15, pp. 23 and 312; Ber. 7, p. 1651, and 8, p. 119, and 9, p. 508.
Action of Organic Acids and Their Anhydrides on the Natural Alkaloids.

Butyric anhydride with morphine yields tetrabutyryl morphine. This upon boiling gives the dibutyryl compound and butyric acid is liberated.

Acetyl-butyryl-morphine is formed by treating morphine with equivalent quantities of acetic and butyric acids.

Morphine heated to 130° with benzoic anhydride forms tetrabenzoyl morphine. This latter compound upon boiling with water and alcohol generates dibenzoyl morphine and benzoic acid.

The introduction of acetyl groups into tetramorphine almost wholly deprives it of basic characteristics.

With ethyl iodide the following compounds have been formed: Tetra-acetyl-morphine-ethiodide, diacetyl-morphine-ethiodide and its isomers tetra-butyryl-morphine-ethiodide, dibutyryl-morphine-ethiodide, tetrabenzoyl–morphine–ethiodide and diacetyl–dibenzoyl–morphine-ethiodide.

Sodium ethylate on acetylated morphine does not produce ethylated bases; but the alkaloid is in part reproduced and in part polymerized.

Beckett, G. H., and Wright, C. R. A. 1875.
J. Chem. Soc. 13, p. 25; Ber. 7, p. 1651.
Benzoic and Acetic Anhydrides on Morphine Derivatives.

An attempt was made to replace benzoyl by acetyl and vice versa. No noticeable action could be brought about.

Beckett, G. H., and Wright, C. R. A. 1875.
J. Chem. Soc. 13, p. 25; Ber. 7, p. 1651.
Action of Benzoic Anhydride on α-Diacetyl Morphine.

α-diacetyl-dibenzoyl-morphine has been prepared and has the following composition: $C_{34}H_{34}(C_2H_3O)_2(C_7H_5O)_2N_2O_6$.

Bauer, H. R. 1875.
J. Chem. Soc. 13, p. 467; Pharm. J. Trans. 5, p. 422.
Iodine Compounds of Morphine.

The following crystalline compounds have been found by the author: $2(C_{17}H_{19}NO_3)_3I$, $C_{17}H_{19}NO_3.HI_4$ and $(C_{17}H_{19}NO_3.HI.3H_2O)$.

Beckett, G. H., and Wright, C. R. A. 1875.
J. Chem. Soc. 13, p. 689; Ber. 8, p. 778.
Action of Polybasic Acids on Morphine and Codeine.

If morphine be heated with succinic acid to one hundred and eighty degrees, a reaction according to the following equation takes place: $C_{34}H_{38}N_2O_6+2C_2H_4(COOH)_2=2H_2O+C_{34}H_{36}(COC_2H_4COOH)_2N_2O_6$. This compound is both basic and acidic. Its salts with acids are more stable than those with bases. The substance crystallizes from 80 p. c. alcohol and gives with hydrochloric acid $C_{36}H_{40}(C_4H_5O_3)N_2O_6.2HCl.2H_2O$.

Camphoric acid acts upon morphine in a similar manner, giving a compound which is both basic and acidic in its nature.

With oxalic acid and morphine heated to 150°, CO and CO_2 are produced, while the base is at the same time polymerized into tri- and tetra-morphine.

Vogt, E. 1875.
Arch. der Pharm. (3), 7, p. 23; J. Chem. Soc. 1875, (1), p. 280; Chem. Centrbl. 1876, p. 133.
Occurence of Morphine in the Excreta.

The author examined the urine and fæces of a man, who had been long accustomed to daily taking large doses of the alkaloid. No morphine was found in the urine, but weighable quantities were found in the fæces.

* Prepared under the direction of A. B. Prescott for the use of the Special Committee of Research, Am. Pharm. Association.

Hilger, A. 1875.
Arch. der Pharm. (3), 6, p. 509; J. Chem. Soc 1875, (1), p. 404.
Combinations of Several Alkaloids with Iodine.

The author shows that H. R. Bauer's published work in 1874 was only a repetition of that done by Jorgensen in 1869. Furthermore the author in the same year published a paper in which all the results of Bauer were anticipated.

Husemann, A. 1875.
Arch. der Pharm. (3), p. 231; J. Chem. Soc. 1875, (1), p. 777; Chem. Centrbl. 1875, p. 264.

Husemann's test having been called in question by Mohr, the author states that $\frac{1}{100}$ mgm. of morphine may be detected by this test.

Konrad, Max. 1875.
Chem. Centrbl. 1875, p. 75.
Combinations of Acetone with Alkaloids.

The author gives a method for the preparation of morphine acetone.

Selmi, F. 1875.
Ber. 8, p. 1198.
Reagents for alkaloids.

The author recommends the following reagents for the systematic identification of the alkaloids: iodine in hydriodic acid, auric bromide, sodium auric hyposulphite, potassium auric iodide, potassium platinic iodide, lead tetrachloride and manganese superoxide hydrate in sulphuric acid.

Schmidt, E. 1875.
Ann. 180, p. 287; Ber. 8, p. 1267; J. Chem. Soc. 15, p. 94.
Action of Hydrogen Sulphide on the Alkaloids.

The alkaloids when treated with hydrogen sulphide form compounds of the base with sulphur, and sulphur is at the same time separated.

On account of the instability of the compounds they are very difficult to obtain in a pure condition.

Selmi, F. 1876.
Gazz. chim. ital. 5, p. 255; J. Chem. Soc. 14, p. 113; Ber. 1876, p. 195.
On the Detection of Poisonous Alkaloids.

Two new reagents are given for the detection of poisonous alkaloids: Potassio-platinic iodide and potassio-auric iodide.

A test is also given for distinguishing opium alkaloids by means of iodised hydriodic acid, and tests by gold bromide, and other reagents.

The reaction with morphine is the most delicate and characteristic.

Naglevoort, J. B. 1877.
Arch. der Pharm. (3), 9, p. 249; J. Chem. Soc. 17, p. 230; Chem. Centrbl. 1876, p. 713.
Ammonium Sulphomolybdate as a Test for Alkaloids.

Distinctive color reactions with the alkaloids are produced with this reagent.

Cleaver, E. L. 1876.
Pharm. J. Trans. 7, p. 240.
Report on the Assay of Opium for Morphia.

The author discusses fully the conditions required for an accurate determination of morphine in opium, and then criticises a number of the existing methods. He shows wherein they are at fault and suggests improvements in some of them.

Proctor, B. S. 1876.
Pharm. J. Trans. 7, p. 244.
Note on the Assay of Opium.

The author gives the results (at which he has arrived after long experience) as to best methods to be pursued in the determination of morphine in opium.

Prescott, A. B. 1876.
Pharm. J. Trans. (3), 6, p. 404; J. Chem. Soc. 1876, (1), p. 403.
Comparative Determinations of the Solubilities of Alkaloids in the Crystalline, Amorphous and Nascent States.

Purified ether, amylic alcohol and benzene were used as solvents. The author gives in tabulated form the number of parts of solvent required for one part of the alkaloid.

In general the crystallised alkaloid requires more of the solvent than it does in the amorphous or nascent states.

Merck, M. 1876.
Pharm. Ztg. (3), 1876, 325*; Pharm. J. Trans. 7, p. 229.
Notes on Morphine Acetate.

This salt is unstable, decomposing into acetic acid and a basic salt.

Commercial acetate of morphia will not dissolve without coloration in concentrated sulphuric acid.

Hager, H. 1876.
Pharm. Centrlh. 16, p. 444; Chem. Centrbl. 1876, p. 90; J. Chem. Soc. 16, p. 748.
Testing of Quinine Salts for Strychnine and Morphine.

The reagents used in this test are pure concentrated sulphuric acid, crystals of potassium dichromate and silver nitrate.

When the two reagents last named are added to the sulphuric acid solution of morphine, a reddish-brown coloration is produced.

Krause, G. 1876.
Arch. der Pharm. 5, 507; J. Chem. Soc. 1, p. 777.
Examination of the *Fructus Papaveris* for Morphine, Narcotine and Meconic Acid.

Morphine was found in weighable quantities in this plant.

Teschenmacher, E. F. 1877.
Chem. News 35, p. 47; J. Chem. Soc. 17, p. 231; Chem. Centrbl. 1877, p. 249.
Determination of Morphine in Opium.

Previous methods having proved to be unsatisfactory, due no doubt to a lack of minuteness in the description of the plan to be followed, and also a lack of painstaking investigation as to the probable sources of error, a new method is proposed and accurately described. The use of alcohol for extracting the opium is avoided and meconic acid is separated as soon as possible in order to prevent a precipitate of basic meconate of morphine.

Lindo, D. 1877.
Chem. News, 36, p. 228; J. Chem. Soc. 17, p. 906; Ber. 2, p. 809.
Action of Sulphuric Acids and Oxidizing Agents on Morphine.

All oxidizing agents when added to a solution of morphine, which has been treated by warming with concentrated sulphuric acid, allowed to cool and then diluted, give a deep red coloration.

Codeine and narcotine act in a similar manner.

Selmi, F. 1877.
Gazz. chim. ital. 4, p. 32; J. Chem. Soc. 31, p. 110; further Ber. 11, p. 809. Also a monograph entitled "Nuovo processo generale per la ricerca della sostanza veneficheˮ Bologna, 1875.
Modification of the Process of Extracting the Poisonous Alkaloids from the Viscera.

On account of the acidulated alcoholic extract of the alkaloids undergoing an alteration during evaporation as ordinarily conducted, the author gives a new method by means of which these errors are avoided.

(To be continued.)

MONTHLY REVIEW.

Chemistry.

Action of Tannin and Gallic Acid on some Alkaloids.

According to W. O. de Coninick, an aqueous solution of tannin immediately precipitates pure and anhydrous nicotine, and an alcoholic solution precipitates nicotine from its solution in alcohol. Ethereal solutions behave in the same way. Gallic acid has no action on pure nicotine, but in presence of water a deep orange-red coloration is developed more rapidly than with tannin.

With cicutine or its aqueous solutions, neither dry tannin nor dry gallic acid produces any reaction, but with the aqueous solutions a blood-red color soon develops. An aqueous solution of tannin precipitates pure and anhydrous cicutine, and alcoholic or ethereal solutions precipitate the corresponding solutions of the alkaloid. The reactions are somewhat sensitive, but nicotine is precipitated by tannin from much more dilute solutions than cicutine.

[J. C. S. 72, p. 447; from C. r. 124, p. 773.]

Apparatus for the Liquification of Air and for the Production of Low Temperatures.

This apparatus was reported upon by the inventor, Prof. Linde of München, at the fourth annual meeting of the German Electrochemical Society, held at München, This new machine consists in one air compresser and two parts for the equalization of temperature, and is capable of producing several litres of liquified air per hour. The problem of producing large quantities of liquified air in a cheap and simple manner seems now to be solved. The manner of producing the cold consists in this machine, in opposition to those of Siemens and Solvay, in that heat is taken from the gas to be liquified, by doing internal work. The liquified air thus produced was passed around in test tubes during the lecture. Temperature—190°.

French Oil of Basil.

This oil, according to J. Dupont and J. Guerlain has a sp. gr. of 0.914 at 15°, and a rotation of — 7° 40′ in a 100 mm. tube. When distilled under atmospheric pressure, four-fifths pass over between 190—220°, a brown resinous mass remaining in the distilling flask, and on further fractionation, two main fractions are obtained, the one boiling at 195—200°, the other at 205—215°. The former is an oily, refractive liquid possessing the odor of lævorotatory linalool, and having the formula $C_{10}H_{18}O$; the following properties are recorded: sp. gr. = 0.8552 at 15°; $[\alpha]_D = -14.03°$; index of refraction, $n_D = 1.4565$; molecular refraction = 49. It combines with 4 atoms of bromine, giving an uncrystallizable liquid product, and, on heating with acetic anhydride, an acetate boiling at 128° (14 mm.), which on saponification with alcoholic potash, yields geraniol, boiling at 115—117° (15 mm.). This fraction, therefore, consists of lævorotatory linalool. The fraction boiling at 205—215° had the odor of estragol, and exhibited a rotation of — 6° 40′ in a 100 mm. tube. Even after treatment with alcoholic potash, in order to free it from ethers, and further fractionation, it was found impossible to obtain a product of definite composition. Its odor, its boiling point, and the formation of methylic iodide on treatment with hydriodic acid, having rendered it probable that this fraction consisted chiefly of estragol, it was heated with concentrated alcoholic potash for 24 hours, and after treatment with water and extraction with ether, the product was fractionally distilled. The main fraction boiling at 225—230°, instantly solidified on the addition of a crystal of anethol, and melted, after drying between filter paper, at 21°. The second fraction, therefore, of the oil consisted of estragol (paramethoxyallylbenzene).

[J. C. S. 72, p. 429; from C. r. 124, p. 400.]

Botany and Pharmacognosy.

Cicuta vagans Greene.

Prof. U. P. Hedrick reports frequent poisoning of stock and not rarely of human beings also by the thickened root of a near relative of our socalled "wild parsnip", *Cicuta maculata* L. The western species, *C. vagans* Greene, very closely resembles the plant of the more eastern localities, but seems to be confined to the West. It occurs not only in Oregon but also in N. California, Washington and British Columbia. Of its deadly nature there is no doubt, a piece of the size of a walnut being found by experiment sufficient to kill a cow. Death occurs usually in a few hours. Of interest is the fact that the root seems to possess poisonous properties only when dormant during the winter months and in the early spring for a short time after growth has begun. No remedy for cicuta poisoning was found to be reliable and efficient.

[Bull. 46. Oregon Experiment Station. June 1897.]

The Camphor Tree.

The Division of Botany of the U. S. Department of Agriculture has issued a circular on the camphor tree. The main facts concerning the plant, its products and the methods of obtaining them are concisely told.

The camphor tree, while grown in the United States, has but a limited distribution, as indicated by an outline map. A strip along the Gulf, including all of the state of Florida, the coastal parts of California south of San Francisco and limited areas in southern Arizona and along the Rio Grande River comprise the camphor-raising regions.

A table indicating the imports of camphor for the last ten years shows that the United States importations of this commodity have decreased materially in quantity during this period, but increased slightly in total value owing to the increased price per pound. In 1887, this country imported 2,873,184 pounds of crude camphor, valued at $352,861 and 307 pounds of refined camphor, valued at $45. In 1896, 943,205 pounds of the crude article valued at $328,457 and 155,027 pounds of refined camphor valued at $52,811 was imported.

[Circular 12, Div. of Botany, Dept. of Agriculture. 1897.]

Echinacea.

The following quotations are taken from an address by Prof. J. U. Lloyd.

Conspicuous among those who have by rational experimental methods enriched the materia medica of the world, stands the section in medicine with which

my life has been closely affiliated. The world has profited by our experimentation; the American materia medica has been more largely developed by us than by others. Empiricists in the sense that we believe in careful investigation, we have labored more than half a century, and still observing, experimenting, studying the actions of drugs, we go on in the good work. Be it said to our credit, that we are not ashamed of the word experiment; the term empiricist has for us no terror.

Discovery of Echinacea.

In the fall of 1885, I received from Dr. H. C. F. Meyers, of Pawnee City, Nebraska, the root of a plant that he wished named. He stated that he used it in making "Meyers' Blood Purifyer," and his letter head heralded that remedy in large type. At the same time he sent Prof. John King a bottle of the preparation,

making for it the most exaggerated claims. King informed Dr. Meyers that he could do nothing with a secret mixture; that if he wished it presented to the medical profession through him, the drugs entering into its composition must be public. At the same time I wrote him that the plant could not be determined from the root alone. Under date of June 7th, 1886, Dr. Meyers then sent me a large box of the root, and again, Sept. 28, 1886, mailed the whole plant. This proved to be echinacea angustifolia D. C. Still the exaggerated claims of Dr. Meyers in behalf of the remedy, which he claimed would cure nearly everything from rattle-snake bite to typhoid fever, led me to discredit it entirely. Not so with Prof. King, who proposed to sift the chaff from the grain, and for whom I at once instituted several series of experiments with echinacea in a pharmacal direction.

Introduction to the Profession.

By advice of Dr. King, specimens of his preparation and of the drug were submitted by Dr. Meyers to other Eclectic physicians, among whom was Dr. I. J. M. Goss, of Atlanta, Ga., who became an enthusiastic advocate of echinacea—almost as enthusiastic as was Dr. Myers; and Prof. H. T. Webster, M. D., of Oakland, Cal., who used the preparation made by me for King, and who then advocated it highly in his Dynamical Therapeutics.

In 1887, Prof. King wrote a paper (E. M. Journal, p. 209) on the drug, and in 1893, C. G. Lloyd (Eclectic Annual, Vol. IV., p. 332), who named the plant for Dr. Meyers, contributed a paper on the drug. During this time and afterward as well, Prof. Goss mentioned the remedy frequently and under the advice and authority of Prof. King, who ultimately became a strong advocate of its virtues. Physicians generally wrote frequent articles for the journals, and at the present day, eleven years after it was brought to our attention, the drug may be said to be established in Eclecticism.

Characteristics.

Echinacea root has a brown or brown-red color. It is much wrinkled longitudinally, and the folds of the shrunken epidermis often twist about the root in spiral form. When sliced transversely, the yellowish medullary rays are seen to be separated from each other by a greenish pulp, and when the dried root is broken the fracture presents the appearance of having been afflicted with dry rot. Upon chewing the root of prime echinacea, a sweetish taste presents itself, which, upon prolonged chewing, becomes acrid and finally tingling, which remains long to affect the tongue. This sensation reminds us of aconite, but it is devoid of the benumbing quality of aconite. Indeed, more than one physician has inferred from this similarity of taste, that by mistake aconite had been sold under the echinacea label. In early experience with the drug I found insipid, tasteless lots that proved worthless in medicine. These specimens all came from low lands east of the Mississippi river, for the plant is not confined exclusively to the West. Unquestionably those who depend on the crude root as a standard, will find great variation in product.

Echinacea contains minute amounts of a colorless alkaloid, which, however, does not constitute the therapeutical qualities of the drug. It contains much sugar and large amounts of coloring matters which prove injurious if allowed to remain in its preparations. The sensible constituent is a colorless organic substance of acid reaction, which is intensely acrid and persistent—distressingly so in a pure condition. It exists in prime echinacea in minute amounts, less than one half of one per cent.

New Remedies.

Anilipyrine.

This is the name given by Gilbert and Yvon to a new antipyretic product by melting together 1 p. antifebrine and 2 p. antipyrine. Anilipyrine is readily soluble in water and is weakly toxic. It reduces the body temperature to a greater extent than antipyrine, but less than antifebrine. It is especially recommended in influenza and polyarthritis, hemicrania and neuralgia. Single dose, 0.5 g.; dose per day, 1—2 g.

[Ph. Centralh., 1897, p. 501.]

Eka-Iodoform.

This substitute for iodoform was first employed with good success by Dr. Thomalla in all cases where iodoform had hitherto been used. According to the manufacturers, the Chemische Fabrik auf Actien, Berlin, this new remedy is a mixture of iodoform and paraform. While having decided antiseptic properties, eka-iodoform is said to never produce irritation.

[Ph. Centrh., 1897, p. 465.]

Guiaiaquine.

This is a substitute for guaiacol, recommended because free from the odor and caustic properties of the latter. It is obtained by interaction of equimolecular quantities of guaiacolsulfonic acid and quinine. Guaiaquine ($C_6H_4O_2CH_3HSO_3.C_{20}H_{24}N_2O_2$) is described as a yellowish powder, having a sour and bitter taste, readily soluble in water, alcohol and dilute acids.

[Ph. Centralh., 1897, p. 501.]

Literary.

Books and Pamphlets Received.

Missouri Botanical Garden—St. Louis. Botanical Observations on the Azores. By Dr. William Trelease, Director. One vol., pp. 220, with 55 plates. 1897.

American Pharmaceutical Association.—Report of the Proceedings of the Seventh Pharmaceutical Congress, held at Chicago, August 21, 22, 23, 1893. One vol., pp. xxx, 102. 1897.

Leopold Voss—Hamburg. Praxis der Harnanalyse. Anleitung zur chemischen Untersuchung des Harns, nebst einem Anhang: Analyse des Mageninhalts, von Dr. Lassar-Cohn. Brochure, pp. 38. 1897. M. 1.00.

Author.—Ueber Condensationsprodukte des Cyclo-Methyl-Hexanons. Inaugural-Dissertation zur Erlangung der Doktorwürde der hohen phil. Fakultät d. Georg-Augusts Universität zu Göttingen vorgelegt von John Thompson Dorrance aus Bristol, Pa. Pamphlet, pp. 87. 1897.

F. B. Power*—London. Création d'un laboratoire de vérification générale des médicaments dans tous les pays, par M. de Ridder, pharmacien à Anvers. Pamphlet, pp. 6.

——Sur la convenance de la promulgation d'une Pharmacopée universelle, par José D. Morales, pharmacien et chimiste à Mexico. Pamphlet, pp. 3.

——De la préparation et de la vente des sucs organiques, par M. A. Denaeyer. Pamphlet, pp. 32.

——L'inspection des pharmacies au point de vue de la pureté des médicaments, par M. Schamelhout, pharmacien à Bruxelles. Pamphlet, pp. 4.

——Dans l'état actuel de la science, n'est-il pas désirable d'exiger dans les médicaments, drogues, et leur préparations, une teneur normale en principes actifs? Rapport de M. le Dr. F. Ranwez. Pamphlet, pp. 10.

——De l'institution d'un conseil supérieur de chimie légale, par M. Louis Huart, pharmacien à Louvain. Pamphlet, pp. 8.

——Prescriptions et mode d'emploi des médicaments, par M. J. Breuzelmans, pharmacien à Anderlecht, Bruxelles. Pamphlet, pp. 13.

——Sur le titrage des drogues et des préparations galéniques, par M. Duyk. Pamphlet, pp. 31.

——Moyen pratique et légal d'éviter les rabais sur la prix marqué des specialités. Résumé du rapport de la commission composée de M.M. Chaux, Dognon et Languepin, du Syndicat des pharmaciens de la Charente, par M. J. Raymond. Pamphlet, pp. 4.

——Analyse des eaux alimentaires. Rapport de M. Charles Pottiez, pharmacien à Fontaine-l'Evêque. Pamphlet, pp. 19.

——Les spécialités pharmaceutiques, par M. Aimé Bekaert, pharmacien. Pamphlet, pp. 7.

——Réglementation de l'exercise de la pharmacie. Rapport de M. Léon Gosset, pharmacien à Ixelles. Pamphlet, pp. 43.

Author.—Medical Botany. Address before the Section of Materia Medica, Pharmacy and Therapeutics at the Philadelphia meeting of the Am. Med. Ass'n. By Prof. Wm. Trelease, Director of the Missouri Botanical Garden. Pamphlet, pp. 12.

Author.—Proprietary vs. patent medicines. Reprint from the Transactions of the Wis. Med. Soc.; and Carvacrol iodid, reprint from the Journ. of the Am. Med. Ass'n., by Dr. A. H. Cohn, Milwaukee.

Author.—A plea for a uniform diastase test. By Dr. C. C. Fite, New York. Reprint from the Journ. of the Am. Med. Ass'n. Pamphlet, pp. 8.

Reviews.

Lehrbuch der physiologischen Chemie mit Berücksichtigung der pathologischen Verhältnisse. Für Studirende und Aerzte. Von Richard Neumeister, Dr. med. et phil., a. o. Professor der physiologischen Chemie an der Universität Jena. Zweite, vielfach vermehrte und theilweise umgearbeitete Auflage. Mit einer lithographischen Tafel. Verlag von Gustav Fischer, Jena. 1897. M. 17.00; geb. M. 19.50.

At no time possibly have both physician and pharmacist been more in need of a well grounded knowledge of physiology and physiological chemistry than at present. Serum-therapy and organotherapy are not only the fashion of the hour, but each apparently has come to stay for some time at least. For a generation or two the progress of chemistry, and particularly of organic chemistry, had been so phenomenal that not only the laity, but even scientists were possessed of the notion that nothing could escape the chemical analyst. More than that, the synthetic chemist had outstripped nature. He produced new remedies much faster than she could, better than the natural

* Dr. Power was one of the American delegates to the Eighth International Pharmaceutical Congress, at which these papers were presented.

ones and with unerring certainty, being independent of climatic and atmospheric conditions.

Whereas the synthesis of new remedies is going on and much good work is being done in the pharmacologic and therapeutic study of these new comers, there can be no denying that the pendulum has begun to swing back, but not so much in the direction of vegetable remedies, as in that of animal remedies. Remedies which less than a generation ago would have been branded as products of quackery, are now elevated to a position over and above empiric therapy. Physiology and physiological chemistry have discovered facts which medicine has been quick to appropriate.

Both the proper use and the abuse of these facts, bordering on quackery if not quackery itself, make a knowledge of physiology and physiological chemistry a very essential part of the mental armamentarium of the physician and also of the pharmacist. Whereas it is true that the physician is in need of this knowledge to rationally apply it in his practice, the pharmacist is in no less need of it as a useful servant of the public. For people will come to him to purchase for self-medication those animal remedies, the advertising of which in our daily papers appeals more to a pathologic condition of the mind than of the body.

It is with pleasure, therefore, that we greet the second revised and enlarged edition of Neumeister's Lehrbuch der physiologischen Chemie. The first edition has met with so much favor, that the second may expect even a more hearty welcome, especially at this time. The book is divided into two large parts, viz. 1. Nutrition; and 2. The animal tissues and fluids.

After a general introduction on the conservation of matter and energy, and on animal and plant life, the author discusses in various chapters: — 1. The chemical processes in the animal cell, and the cell contents; 2. Aliments; 3. Ferments; 4. Digestion; 5. Resorption and the immediate fate of the resorbed material; 6. The supply of food, and the significance of food-stuffs for the organism. The second part includes the following chapters: — 7. The muscles; 8. Tissues of support; 9. The nervous system; 10. The skin, its appendages and secretions; 11. The glandular organs; 12. Egg and sperm; 13. Blood and lymph; 14. The milk; 15. Urine.

This book of almost a thousand pages is too comprehensive to allow of more than indicating its contents. Special attention, however, may be called to one or two chapters to indicate its interest and usefulness to the pharmacist as well as to the physician. The proper administration of medicines demands more than a common school knowledge of the physiology of digestion. Although the physician prescribes and directs, the pharmacist is frequently called upon by the patient to explain the directions which he had failed to comprehend. The correction of a poor digestion has largely become a matter of self-medication with the introduction of no small number of enzymitic preparations. The proper application of these remedies requires a knowledge of a field that has proven of special interest to chemists and biologists in recent years.

Another chapter that will possibly appeal stronger to the man with a practical turn of mind is that on urine, to which all of two hundred pages are devoted. Both the normal and pathological conditions of this excretion are discussed in detail.

Courses in medicine and especially in pharmacy are as a rule too short to permit even the elementary study of physiology or physiological chemistry. Both pharmacist and physician will find these branches interesting and profitable studies after graduation. A work like this one of Neumeister should be found in the library of every progressive pharmacist and physician. *E. K.*

Botanical Observations on the Azores. From the eighth Annual Report of the Missouri Botanical Garden. By William Trelease, Director. pp. 77–220, with 54 plates (12–66).

The paper deals largely (though not exclusively) with observations and collections made during the summers of 1894 and 1896 by the author. The first thirteen pages are devoted to observations on the geology, meteorology, cultivated plants and history of botanical work of the islands. The remainder of the paper is composed of a list of plants with occasional critical notes. A list of the principal works dealing with the botany of the island is appended. The paper will form a desirable addition to the library of the systematist. *L. S. C.*

An Illustrated Flora of the Northern United States, Canada and the British Possessions from Newfoundland to the parallel of the southern boundary of Virginia, and from the Atlantic Ocean westward to the 102d Meridian. By Nathaniel Lord Britton, Ph. D., Emeritus Professor of Botany in Columbia University and Director-in-chief of the New York Botanical Garden, and Hon. Addison Brown, President of the Torry Botanical Club. Vol. II, pp. IV, 643. Charles Scribner's Sons, New York. 1897.

When in the latter part of last year the first volume of this work was issued, the public was promised its early completion, and the appearance at this time of the second volume augurs well for the fulfillment of that promise. The second volume contains the *Portulacaceæ* to *Menyanthaceæ* inclusive and is equal in every respect to the first volume. The Review took occasion to criticize adversely the use of the duodecimal system of measurements when the first volume appeared and notwithstanding the reasons recently offered in justification by the authors it would seem that the use of the decimal system might better have been used. The early appearance of the concluding volume will be welcomed by all. *L. S. C.*

Arzneimittel welche in dem Arzneibuch für das Deutsche Reich, dritte Ausgabe, Neudruck 1895, nicht enthalten sind. Zweite Ausgabe. Bearbeitet und herausgegeben vom Deutschen Apotheker-Verein. Ein Bd., pp. VIII, 379.

The United States Pharmacopœia, like the pharmacopœias of Europe, is not a descriptive catalogue of our entire materia medica, but contains only a selected list of chemicals, drugs and preparations which are more or less generally used throughout this country. Although our pharmacopœia is not a government publication it has had the result of making preparations more uniform in all the states as far as the U. S. Pharmacopœia took cognizance of them. This naturally left a

much greater number of galenicals without any standard formula for their preparation. This lack of standard was not only an annoyance to both pharmacist and physician but also a menace to the public. The American Pharmaceutical Association remedied this evil in part by the publication of the National Formulary, the first issue of which appeared in 1888.

This Formulary has not only been of great service in this country, but the idea of such a voluntary standard supplementary to the pharmacopœia apparently has met with considerable favor abroad. Following "dem Beispiele ausländischer Vereine", the German Apothecaries' Society in 1889 determined to prepare a national standard for the more important articles of the unofficinal materia medica. The Pharmacopœial Commission of the society was requested to prepare such a work, and the first edition published by the society appeared in 1891.

The book met with such favor that the edition was soon exhausted. Numerous requests for copies, as well as the publication of the "Nachtrag,' to the third edition of the German Pharmacopœia by the government, therefore, made a second edition of this "Ergänzungsbuch" or supplementary unofficial pharmacopœia, as it might be designated, desirable. The second edition of the "Ergänzungsbuch" now lies before us.

The "Ergänzungsbuch," to avoid the long title of the work, differs from our National Formulary in corresponding more to the pharmacopœia. It is in fact a supplementary unofficial pharmacopœia. Whereas the National Formulary, true to its name, contains formulas of non-official galenical preparations only, the "Ergänzungsbuch" contains many other articles of our modern materia medica. Special attention has been given to modern chemical remedies, the so-called "new remedies," whether new or comparatively old. Of these the method of preparation is not given, but the standard of purity to which they should conform. Also some of the organo-therapeutic preparations are included.

The Table of maximum doses has been revised by Prof. Lewin of Berlin. Table B contains a list of poisons (*Venena*) and table C enumerates those articles which should be preferably kept separate from the general stock of the pharmacy (*Separada*). The book is further provided with an index of synonyms and with a general alphabetic index.

The "Ergänzungsband" contains 892 items or articles and may well serve both as stimulus and model for a similar supplementary volume to our U. S. Pharmacopœia. That there is a need for such in this country beyond the National Formulary but few can doubt. Our modern materia medica changes very rapidly in large part. Besides an official pharmacopœia that will cover all demands of the pharmaceutical and medical fraternities in the United States is even less possible than in Germany. With no American unofficial standard of this kind, the German reading pharmacists of this country will find the "Ergänzungsband" of their confrères in Germany very serviceable. Whatever the shortcomings of such a work may be, for it is absolutely impossible to satisfy all sectional demands, the German Apothecaries' Society may well be congratulated upon its excellent achievement in this direction. *E. K.*

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EDITORIAL.

Early in the year (p. 21) attention was called to the decision of the Supreme Court of Ohio regarding the authority of the various editions of the United States Pharmacopœia. The Court decided that as far as Ohio is concerned the edition of 1880 and not that of 1890 is authority, because the Ohio law was passed in 1887 and had reference to the edition then in use only. This decision, if concurred in by the courts of other states, no doubt would create different standards for different states. Such a condition would be exceedingly deplorable—indeed, the prospect of it may well cause men to stop and think, and should do more by far, viz. cause men to act with the least possible delay. However much we may deplore such a decision, or rather the legal state of affairs that necessitates such a decision, it must appear foolish in the extreme for pharmaceutical editors to find fault with the unanimous decision of a state supreme court. Yet this very thing has happened only last month, almost a year after the opinion has rendered. The Wisconsin Dairy and Food Commission acted much more rationally in the matter than this Eastern editor. The legislature was in session at that time and upon notification of the Ohio decision it immediately forestalled a like misfortune in Wisconsin by having the necessary alteration of the law made. The article defining an adulteration now reads in part as follows: "In the case of drugs: First, if, when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, or purity laid down in the *latest current edition* thereof."

The Ohio commissioner has recently issued a circular, which, according to the reports of several pharmaceutical journals, is creating consternation in the ranks of "patent medicine" men. The general poison law, demanding the proper labeling of poisonous substances as such, is to be applied to secret nostrums. Now it is generally known that in order to secure pharmaceutical legislation great concessions had to be made to those secret nostrum manufacturers who are in position to wield great influence through the daily press and even in legislative lobbies. On *a priori* grounds it would, therefore, seem rational to suppose that the general poison law was originally not intended to apply to secret nostrums. However, the Ohio commissioner has, no doubt, consulted the state attorney and we hope that he may carry his point, but we should not be surprised if the courts were to decide against his interpretation of the scope of the law. Here again the Wisconsin commission has done the wiser thing and has secured the passage of the following clause:

"No person by himself, his servant or agent, or as the servant or agent of any other person, shall sell, exchange, deliver, or have in his possession with the intent to sell, or exchange, or expose, or offer for sale or exchange, any medicine known as patent or proprietary, or of which the formula is kept secret by the manufacturer, which contains morphine, strychnine, cocaine, or poisonous or narcotic alkaloid or drug in any quantities which the state board of health shall deem harmful to the life or health of the public, unless the presence of the same be distinctly shown by the label upon the bottle or package and upon the outer wrapper thereof."

It becomes evident that hereafter, if the law is enforced, Wisconsin druggists will have to assume responsibility for the articles they sell and that ignorance or even good intentions will no longer be an excuse before the law after January 1, 1898, when the new law goes into effect. The state board of pharmacy evidently has recognized this fact and through the press has announced its intention to duly warn the druggists of the state by means of a circular.

In viewing the situation from an unprejudiced standpoint at least two things are to be taken into consideration. First, if the state board upon examination pronounces a candidate competent to perform the duties of a pharmacist by granting him a licentiate certificate, such a person is supposed to be responsible for his acts. The very fact that he is compelled by law to place his registration certificate in a conspicuous place emphasizes this fact. The public that is to be protected by such legislative restriction of the practice of pharmacy naturally believes that it is duly protected against fraud and ignorance if it entrusts its life to the hands of a person pronounced competent and responsible by law. That the pharmacist should have been permitted to plead ignorance or good intentions seems to have been out of harmony with the intentions of all pharmaceutical legislation.

On the other hand the secret nostrum evil is one for which the druggist is but in small part responsible. Had the druggist refused from the beginning to have anything to do with this crime on humanity, he would have been spared many afflictions that now beset him. The fact that the druggist kept and sold this class of preparations, though at times reluctantly, no doubt raised this class of medicines in the eyes of the public. Having once made a compact with Mephisto, the druggist now finds it exceedingly difficult to get rid of him. On the other hand the public now demands these remedies, nine-tenths of the demand being created by advertisements in the daily press. That such advertisements are mostly vile corruptions of the truth, does not speak well for the educational influence exerted by the press but does not alter the situation.

That the druggist should be made the principal sufferer for an evil in the creation and maintenance of which he has been at times a willing, at times an unwilling servant of the public, does not seem just. The campaign conducted against the secret nostrum evil must be largely educational in character. The manufacturer who wilfully deceives the public should be exposed and prosecuted. The druggist cannot be expected to examine secret remedies for poisonous substances, because these preparations are sold only in sealed packages. Neither can he know what the board of health may decree "harmful" and what not. The proper course to pursue in this instance is to have the state board of health with the assistance of the state chemist decide what secret remedies should properly be sold in accordance with the provisions of the law and to make known their conclusions to the public and to the druggists in particular. If after such announcement has been made any druggist is found to flagrantly violate the law by selling secret preparations containing harmful ingredients without proper label, then he should be severely punished. *E. K.*

German Association of Naturalists and Physicians.

The 69th annual meeting of this association, corresponding to the "American Association for the Advancement of Science," was held in the old city of Braunschweig, September 19 to 24. The association embraces at present 1040 members; it represents all branches of theoretical and applied natural sciences under the aspects of academical education and study and it divides the deliberation at its annual meetings into 33 and more special sections. Of these, medical sciences stand in the front rank and pharmacy in the last line.

The meetings are conducted in the same way as those of the corresponding associations in the United States and in England. The opening and the concluding sessions are in common and include the customary complimentary greetings and are devoted principally to addresses by some of the most eminent scholars or specialists on topics or problems of the time and of general and paramount interest. According to the number and the extent of these addresses, one or more general sessions besides the opening and concluding ones are arranged. But the principal and more serious work of these meetings is accomplished in the sections, which are devoted entirely to the reading of papers or the demonstration of experimental work and didactic problems. The sections generally hold a morning and an afternoon session, while the evenings are devoted to social or other intellectual recreation and to public entertainments or private receptions.

The public lectures and those of general and commanding interest of the present meeting were those by Professor Richard Meyer of Braunschweig on The relations between theoretical chemistry and research to chemical industry; by Prof. W. Waldeyer of Berlin on Fecundation and inheritance; by Prof. Joh. Orth of Göttingen on Medical education and medical practice; by Prof. Chum of Breslau on Recent deep sea researches, and by Prof. H. W. Vogel of Berlin on The present condition of scientific photography.

The most interesting address to chemists and pharmacists was the initial lecture by Prof. Meyer. The lecture gave a concise review of the metamorphosis of the theory of chemical types to that of the doctrine of the valence of the elements, brought about by the researches and ingenious deductions of Mitscherlich, Kekulé and other chemists, which ultimately gave rise to the fertile chemistry of the benzol derivatives. The practical and economic results of these theoretical doctrines became manifest by the rise of the so-called coal-tar industries, which revolutionized the color and the dying industries of the world and exercised an immense influence and progress in many branches of hygiene and medicine. The endless series of the wonderful coal-tar (aniline) colors, the introduction on a large and cheap scale of carbolic and salicylic acids and the ever-increasing array of synthetic antipyretica and other remedial agents made their victorious and triumphal way to all countries and the chemical industry of Germany rose to an unprecedented magnitude and prosperity.

One of the most remarkable changes in this evolution was that not only the chemical and clinical research laboratories, but not less those of the manufacturing establishments and of the great "color works" shared in this noble race after scientific and practical accomplishments and became important participants in the progress of chemical knowledge and production as applied to sanitary and therapeutical sciences and arts.

The value of coal-tar colors produced in Germany in 1890 amounted to 65 millions of marks and the number of patents granted for this industry by the Imperial Patent Office since its organization in 1877 is said to amount to more than 3000; also the scientific papers presented in argumentation for obtaining patent rights and stored in that office embrace a great amount of most valuable chemical literature.

Later on the discovery and introduction of the serum therapy has introduced an additional factor into the therapeutical application of synthetic remedial agents and the cultivation of this modern branch of organo-chemical and physiological industry has also found the efficient co-operation of "color works." Some of the most prominent ones have added to their chemical research laboratories such for the production of serum and related animal and bacteriological products.

Not less has been the influence of modern chemical research and application upon other important branches of chemical industry, as are the chemistry of the photographic art in all its applications, the sugar industry, the arts of tanning and brewing. As a novel and prospective branch of applied chemistry, electro-chemistry is coming more and more to the front.

In conclusion the lecture sketched the present approved methods for the academic training of chemists. They are in conformity with the demands of the time. The German universities, through the incentives created by their method of teaching chemistry, have brought about the great progress made in the various branches of chemical industry. These institutions will not fail to maintain their unrivalled position for the promotion of true knowledge and for the progress in its application to the best interest and the prosperity of human accomplishments and achievements.

Prof. Waldeyer's address applied more particularly to biological sciences and was summed up with the statement that great progress had been realized in our knowledge of fecundation and inheritance, but that there still remained much to mere conjecture and to further research and elucidation.

Prof. Orth's lecture on medical education and practice was initiated by a retrospect of former and present methods of medical instruction. The former universalist has more and more been supplanted by the specialist in the lecture room, in the clinics and in practice. In consequence of the great strides in most branches of the healing art, the tendency of limiting and of centralizing both the study and the practice of medicine to specialties becomes more and more manifest and necessary, as but few masterminds are able any more approximately to embrace the wide realm of medical knowledge. The profession has fairly well maintained its scope and efficiency, but the methods of education and instruction have recently been forced by the overhelming extent and mass of the collateral sciences upon a retrogressive course.

The great problem of the future practitioner lies less in the cure of human ills, than in their prevention. The future physician will much more have to be a medical adviser in all sanitary and hygienic matters in domestic and public life, so as to secure to the state a healthy and strong generation of men. Home and school hygiene, dietetics and gymnastics are the preventions which the medical practitioner and adviser should cultivate in his peculiar and confidential position in the community. Abstract professional learning shall not supinely shun popular experience and common sense, but shall join hands with approved and rational methods for the amelioration of the physical well being of all men.

The Section of Pharmacy was well attended; about 60 persons entered their names in the list of visitors, which with the exception of the local pharmacists consisted largely of university instructors and a few manufacturers. A detailed account of the programme of this section will be given in the Supplement of the next number.

ORIGINAL CONTRIBUTIONS.

The Caffein Compound in Kola.*

Part II.

KOLATANNIN.

By *James W. T. Knox* and *Albert B. Prescott.*

Products of the Action of Dilute Acids upon Kolatannin.

When kolatannin is boiled with dilute sulfuric or dilute hydrochloric acid, it first passes into solution and on continued boiling a reddish precipitate is formed which becomes gradually darker the longer the heating is kept up. This precipitate is collected by filtration and well washed with water, in which it is insoluble. It is also insoluble in alcohol and only partially soluble in alkali solution. Combustions of this substance, while giving fair duplicates for the same sample, indicate that its composition is not uniform and constant. Samples numbers I and IV were prepared by boiling kolatannin with six percent sulfuric acid, in a flask fitted with a return condenser; number II by heating the tannin and dilute acid in a sealed tube; number III by boiling the tannin and dilute acid in a beaker with occasional addition of water to compensate for evaporation; number V by boiling caffein tannate with dilute acid in a flask fitted with return condenser; number VI is the result of combustion of a similar substance made and reported last year.[28]

	I. Av. of 2.	II. Av. of 2.	III. Av. of 2.	IV. Av. of 2.	V. Av. of 2.	VI. Av. of 2
C.	53.60	50.45	51.27	56.38	54.49	69.20
H.	5.34	4.85	5.24	5.69	5.87	6.70
O.	41.06	44.70	43.49	37.93	39.64	24.10

The aqueous filtrate was shaken out with ether, the residue after evaporation of the ethereal solution was re-dissolved in water and boiled a short time, which caused precipitation of the coloring matter. Then, filtering, it was again extracted with ether and the operation repeated several times. At length the ethereal solution left a nearly colorless residue on evaporation, which responded to the tests for protocatechuic acid. Oak bark tannin also when subjected to similar treatment with dilute mineral acids yields protocatechuic acid.

Etti, Böttinger and Löwe each mention the insoluble red body formed from oak tannin on boiling it with dilute acids, and consider it an anhydrid. They do not agree on which of the anhydrids it is, however. In fact as already mentioned there were many points in their work on tannins on which they were at variance. Etti[29] found gallic acid in the acid filtrate. Löwe[30] does not mention having examined the liquid for bodies other than sugar. Trimble,[31] however, whose work is the most recent, found protocatechuic acid as a by-product, in every case. He does not commit himself on the question of whether the dark brown, amorphous, insoluble substance separated from tannin by the action of hot dilute acids is an anhydrid.

Whatever may be the relation of the body separated in this way from oak bark tannin to the original tannin, there does not as yet seem to us to be any good reason for considering the corresponding substance precipitated from acid solutions of kolatannin, an anhydrid of kolatannin. The evidence thus far is against it. Boiling with dilute mineral acids is in general a means of hydrolysis, rather than of anhydrolysis; we would therefore expect saponification instead of anhydrid-formation: as a matter of fact an aromatic acid—protocatechuic—has been found in the acid filtrate after collecting the insoluble red substance in question, while if the reaction were one of simple anhydrid formation, no by-products should be present. If the red-brown substance were an anhydrid of kolatannin, we would expect it to have a higher percentage of carbon than the original tannin, but in most cases combustion indicates a lower percentage of carbon. We would also expect to find the body of uniform composition when prepared by similar means, but the analyses just mentioned show that it is very variable in content of carbon and hydrogen, while its appearance also varies from red to dark brown. At present no more can be said of this body than we have already said, viz. that it is red or dark brown, amorphous, insoluble in water, in alcohol, in ether and in chloroform, only partially soluble in dilute alkali, and that it is a decomposition product obtained by boiling kolatannin, or caffein kolatannate, with dilute mineral acids.

Knebel's[32] "kolaroth" is a body obtained in the same way, except that he prepared it from caffein kolatannate, or as he supposed "kolanin," which was the alleged "caffein-bearing glucosid" of kola. Inasmuch as the free tannin of kola, and that combined with caffein, are identical, as will appear further on in these pages, it makes no difference which kind of it is used for this purpose. Knebel, however, worked with caffein tannate from the dried drug, while our work has been entirely on that from the fresh drug. He fails to give the figures of his combustions, but Hilger[33] reports the following stated results:

	Found. I.	II.	Calculated for $C_{14}H_{13}(OH)_5$.
Carbon	63.09	62.65	63.16
Hydrogen	6.85	6.50	6.75
Oxygen	30.06	30.85	30.09

This calculated formula does not differ widely in carbon content from that calculated for the fourth anhydrid of kolatannin, $C_{16}H_{16}O_6$.

	Calculated for $C_{16}H_{16}O_6$.
Carbon	63.37
Hydrogen	4.95
Oxygen	31.68

The hydrogen is rather high, however, which makes the oxygen correspondingly low. The results of an analysis of a body like the one Hilger analysed might have been construed to indicate it as a member of the anhydrid series, and inasmuch as he found a substance yielding analytical figures nearly coinciding with those just given for the fourth anhydrid, it is perfectly reasonable to sup-

* Continued from p. 195.

[28] Knox and Prescott, 1896: Proc. Am. Pharm. Assoc. 44, p. 136.

[29] C. Etti, 1884: Berichte 17, p. 1820.

[30] J. Löwe. 1881: Zeitschrift f. Anal. Chem. 20, p. 208.

[31] H. Trimble: "The Tannins" II, p. 92.

[32] E. Knebel, 1892: Apoth. Zeitung 7, p. 112.

[33] A. Hilger, 1893: Vierteljahr. f. öffentl. Gesundpflg. 25, p. 559.

pose that if we had made combustions of a larger number of samples, we might have obtained some results which could be used in support of the idea that these decomposition products of tannins are simple anhydrids of them. Our experience has taught us that the composition of this product is by no means constant with the means used in its preparation, and we saw no good reason for selecting the figures of one combustion from those of a dozen others presumably as near correct, merely to give support to a theory.

It is somewhat puzzling that Knebel and Hilger have found this body of uniform composition. As a matter of fact Knebel reports no figures in support of his claim and Hilger reports only two combustions, still it would be supposed that before assigning a formula to a body of this kind a larger number of combustions would have been made, and with different samples. We do not feel justified in accepting the formula $C_{14}H_{13}(OH)_5$ proposed by them for it, nor do we at present possess sufficient data for a formula. We do not even know that it is not a mixture of two or more substances; and although we have not made any separation of them, it seems to us more probable than otherwise that it is a mixture in varying proportions of certain products of decomposition of kolatannin.

The suggestion of Knebel that the tannin of kola is an oxidation product of "kolaroth" according to the equation

$$\underset{\text{Kola red}}{C_{14}H_{13}(OH)_5} + 4O_2 = \underset{\text{Gallotannic acid}}{C_{14}H_{10}O_9} + 4H_2O$$

is untenable for the twofold reason that we do not find kolatannin or this decomposition product of it to be so readily oxidizable as stated by him and furthermore that kolatannin is not identical with gallotannic acid, the formula of which he has given in the above equation as the formula of kolatannin, nor have we at any time found any gallotannic acid present in kola.

Knebel claims to have prepared a pure product of his kolaroth from the acetyl compound of it; and he further claims that the exact separation of kolaroth may be had by boiling his so-called "kolanin" (caffein kolatannate) with acetyl chlorid, whereby an acetyl compound of "kola red" is formed, and is separated by pouring the mixture of acetyl chlorid and caffein kolatannate into water. The acetyl compound of kola red is thus precipitated and the glucose and caffein pass into solution.

Let us examine this statement in the light of the recent knowledge of the chemistry of this interesting drug. First, as conclusively proven by us last year, the body called "kolanin" is not a glucosid composed of caffein, glucose and "kola red," but is a combination of caffein with the tannin of kola, $C_{16}H_{15}O_3(OH)_5$, and with anhydrids of that tannin, in varying proportions, depending largely on the method used to separate it from the drug. And it contains no glucose whatever, for we have since learned that the evidence of sugar found in it and in free kolatannin last year and reported in our paper was due to the accidental presence of glucose from a faulty method of separation. Moreover, acetyl chlorid does not effect an exact separation of the caffein from this combination. We prepared an acetyl derivative of caffein kolatannate exactly as was done with the other acetyl products and analysed it, with the following results:

Carbon	58.30
Hydrogen	4.85
Nitrogen	2.54
Oxygen	34.31

The nitrogen content corresponds to 8.79 percent of caffein. The caffein kolatannate from which this acetyl compound was made contained 6.53 percent nitrogen, corresponding to 22.6 percent caffein. Caffein was also found in the liquid from which the acetyl compound was filtered. The separation then is not complete and the acetyl compound is not a pure acetyl compound of caffein kolatannate, nor was it expected to be; for as caffein kolatannate contains kolatannin and some of its anhydrids, both capable of forming acetyl compounds, it naturally follows that any acetyl derivative prepared will not be a simple derivative of one of the bodies, as stated by Knebel, but will be a mixture of acetyl derivatives of the tannin and its anhydrids, probably in the proportions in which they existed prior to the operation. With this understanding of it it is difficult to see how Knebel could have prepared the pure and simple acetyl compound in the way stated by him.

The Question of Sugar Production.

Results were obtained in our work last year which seemed to indicate that kolatannin was a glucosidal body. We wished to investigate this question more fully and have done so in the following described way:

Kolatannin was dissolved in water and precipitated by lead acetate, the collected lead salt was washed with water for several hours; the lead salt was then decomposed by dilute sulfuric acid, the lead sulfate filtered out, and the acid filtrate boiled for four hours in a flask fitted with a return condenser. The acid strength was supposed to be about 5—6 percent. The insoluble matter was filtered out, the acid removed by addition of barium carbonate and the liquid again filtered; the coloring matter was precipitated by lead acetate and the precipitate removed by filtration, after which the remaining lead acetate was removed by hydrogen sulfid. The filtrate was boiled to remove all the hydrogen sulfid and made alkaline with a little sodium hydroxid solution. The liquid was still slightly colored. It was tested with Fehling's solution and gave a red precipitate. A portion of it made slightly acid with acetic acid gave negative results when the osazone test was applied, and a control test made at the same time, using a little solution of grape sugar in addition, gave the well known yellow precipitate. This showed that there was no interference with the phenylhydrazin test. Basic lead acetate solution was added, which precipitated the traces of coloring matter in the solution, and after removing the excess of lead, the solution was tested with Fehling's solution again, with negative results this time.

This experiment was repeated in a slightly different way, as follows: The well-washed lead salt of about one gramme kolatannin was heated for two hours at 110° C. in a sealed tube with 30 cc. hydrochloric acid, the tube then opened and the contents filtered to remove lead chlorid and the amorphous red decomposition product of kolatannin. The filtrate was red colored and was shaken out several times with ether. The ethereal solutions were set aside for further examination. The filtrate was then boiled to remove the traces

of ether and exactly neutralized with sodium hydroxid, after which basic lead acetate solution was added until no further precipitation occurred, the precipitate removed by filtration and the excess of lead salt precipitated as lead sulfate by cautious addition of dilute sulfuric acid. The solution was again filtered, made slightly alkaline with sodium hydroxid solution and tested with Fehling's solution with negative results.

The importance of using basic lead acetate to precipitate the coloring matter is shown by the fact that if only normal acetate be used, a small amount of coloring matter is left in solution and gives a precipitate with Fehling's solution, while if basic lead acetate be employed, all the coloring matter is removed and the copper solution is not affected.

In the ethereal solution, protocatechuic acid in small quantity was found, as stated in another part of this paper.

The experiments described having given negative results, the interpretation is made that kolatannin is not a glucosid, and that the evidence we had to the contrary last year was caused by the incomplete removal of the glucose of the plant, due to a faulty method of separation for the tannin, since discarded by us.

It is significant that this result places kolatannin in a category and gives it a character essentially different from the character of caffetannic acid, as understood by the chemical world from the report of Hlasiwetz.

Action of Fused Alkali.

Fifteen grammes kolatannin were fused for two hours with potassium hydroxid, the fused mass cooled and acidulated with sulfuric acid, after dissolving it in water. Without filtering the mixture, it was shaken out with ether, the successive portions of this solvent united and evaporated. The residue was distinctly crystalline, the crystals assuming an arborescent form for the most part. This residue was purified several times by recrystallization, after which it was dissolved in water and submitted to tests. Protocatechuic acid and phloroglucin were found to be present.

Action of Heated Glycerin.

One gramme kolatannin was heated with three cc. glycerin in a porcelain capsule for twenty minutes at 195°—200°. Fifty cc. water were then added and the mixture was shaken out with ether. The residue left on evaporating the ethereal extract was found to contain protocatechuic acid, by chemical tests.

KOLATANNIN FROM CAFFEIN KOLATANNATE.

It has thus far not been found practicable to substitute other means of separation of this tannin from its caffein salt, for the treatment by lead hydroxid, although the disadvantages of this agent are fully appreciated. It is, however, much preferable to lead acetate in this particular case, as lead acetate precipitates some caffein tannate along with the lead tannate, and the resulting tannin is apt to be contaminated accordingly.

Preparation of the Sample.

The caffein tannate is dried on porous plates and finely powdered and sifted; it is then washed with a mixture of ether and chloroform to remove any traces of adhering fat, and dried again. It is then washed with ice-cold water by agitation, drained and washed again until the washings give no precipitate of silver chlorid on being treated with solution of silver nitrate acidulated with nitric acid. The caffein kolatannate is now dissolved in dilute alcohol, making a very concentrated solution; this solution is filtered and poured into ten or twelve times its volume of ice-cold water, whereupon the caffein compound is re-precipitated. It is collected by filtration, drained well and redissolved in dilute alcohol, using gentle heat on the water bath. Freshly precipitated lead hydroxid triturated to a smooth paste with warm alcohol is now added in excess and the mixture warmed on the water bath for a few minutes, with stirring. The precipitate is now allowed to subside and if sufficient lead hydroxid has been added the supernatant liquid will be colorless or faintly straw colored, while the precipitate of lead kolatannate mixed with lead hydroxid forms a compact magma at the bottom of the container. The liquid, which contains kola alkaloids, is poured off and the precipitate is washed repeatedly with dilute alcohol, first by decantation and then by filtration, until several cc. of the filtrate evaporated in a porcelain dish leave no perceptible residue and give no test for caffein. The precipitate is compact and is much more readily washed than that given by lead acetate. It is then suspended in dilute alcohol and treated with hydrogen sulfid until the tannin is all liberated. The lead sulfid is then filtered out and washed with dilute alcohol until the washings are colorless. The filtrate is concentrated by distillation in vacuo to small volume, and eight or ten volumes of water are added. This precipitates a reddish mass, a mixture of certain anhydrids of kolatannin, which is filtered out and set aside. The filtrate containing tannin together with dissolved anhydrids is now shaken with ether once or twice, and the washings thrown away. Then ethyl acetate is added and the tannin separated and purified in the way already described, under the method of preparation of kolatannin.

This "combined" kolatannin, although not quite as light colored as the "free" tannin, shares all its reactions and solubilities.

Combustion of "Combined" Kolatannin.

It was analysed by combustion and the following results obtained, which coincide very closely with those resulting from combustion of the "free" tannin:

	Found.			Calculated for
	I.	II.	III.	$C_{16}H_{20}O_8$.
Carbon	56.53	56.78	56.42	56.45
Hydrogen	5.68	5.79	5.74	5.90
Oxygen	37.79	37.43	37.84	37.65

The Pentacetyl Compound.

This was prepared in the same manner as the other acetyl derivatives and is identical with the pentacetyl compound of "free" kolatannin, heretofore described.

The analytical results are as follows:

	Found.			Calculated for
By combustion. I.		II.	III.	$C_{16}H_{15}(C_2H_3O)_5O_8$.
Carbon	56.75	56.44	56.61	56.72
Hydrogen	5.54	5.41	5.31	5.47
Oxygen	37.71	38.15	38.08	37.81
By saponification.				
Acetyl	38.27	38.53	38.68	39.09

The Bromin Compounds.

These were prepared in identically the same way as the corresponding ones of the free tannin. In appearance and properties there seems to be no difference between these and those of free kolatannin, and for the sake of brevity we shall omit further description and confine ourselves merely to the statement of analytical results, in each case.

Tribrom Derivative.

By combustion.	Found. I.	II.	III.	Calculated for $C_{16}H_{17}Br_3O_8$.
Carbon	33.09	33.25	.....	33.28
Hydrogen	2.84	2.98	.....	2.95
Oxygen	22.50	22.13	.....	22.19
As silver salt.				
Bromin	41.57	41.64	41.74	41.58

Pentacetyl Tribrom Derivative.

(Formed by acetylising the tribrom derivative.)

By combustion.	Found. I.	II.	III.	Calculated for $C_{16}H_{12}Br_3(C_2H_3O)_5O_8$.
Carbon	39.64	39.82	.....	39.65
Hydrogen	3.47	3.61	.....	3.44
Oxygen	26.44	25.94	.....	26.43
As silver salt.				
Bromin	30.45	30.63	30.71	30.43
By saponification.				
Acetyl	26.66	26.97		27.32

Tribrom Pentacetyl Derivative.

(Formed by brominating the pentacetyl derivative.)

By combustion.	Found. I.	II.	III.	Calculated for $C_{16}H_{12}Br_3(C_2H_3O)_5O_8$.
Carbon	39.88	40.15	.....	39.65
Hydrogen	3.26	3.45	.....	3.44
Oxygen	26.34	25.74	.....	26.43
As silver salt.				
Bromin	30.52	30.66	30.57	30.48
By saponification.				
Acetyl	26.78	27.04	.....	27.32

Tetrabromin Derivative.

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{16}Br_4O_8$.
Carbon	29.13	29.35	29.27
Hydrogen	2.29	2.46	2.44
Oxygen	19.86	19.30	19.52
As silver salt.			
Bromin	48.72	48.89	48.77

Pentacetyl Tetrabrom Derivative.

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{11}Br_4(C_2H_3O)_5O_8$.
Carbon	36.12	36.33	36.03
Hydrogen	2.78	2.96	3.01
Oxygen	24.33	23.78	24.02
As silver salt.			
Bromin	36.77	36.93	36.94
By saponification.			
Acetyl	24.64	24.78	24.83

Pentabrom Pentacetyl Derivative.

(Formed by brominating the pentacetyl derivative.)

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{10}Br_5(C_2H_3O)_5O_8$.
Carbon	33.23	32.98	33.02
Hydrogen	2.62	2.72	2.65
Oxygen	21.71	21.78	22.01
As silver salt.			
Bromin	42.44	42.52	42.32
By saponification.			
Acetyl	22.49	22.26	22.75

Hexabrom Derivative.

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{14}Br_6O_8$.
Carbon	23.85	23.68	23.59
Hydrogen	1.77	1.83	1.72
Oxygen	14.76	14.72	15.73
As silver salt.			
Bromin	59.62	59.77	58.96

Tetracetyl Hexabrom Derivative.

By combustion.	Found. I.	II.	Calculated for $C_{16}H_{10}Br_6(C_2H_3O)_4O_8$.
Carbon	29.66	29.92	29.33
Hydrogen	2.46	2.29	2.25
Oxygen	18.73	18.55	19.55
As silver salt.			
Bromin	49.15	49.24	48.87
By saponification.			
Acetyl	16.48	16.73	17.52

Kolatannin Anhydrids obtained from Caffein Kolatannate.

The insoluble, reddish-brown precipitate formed on addition of cold water to the tannin solution after the separation of the tannin from its lead salt, as mentioned in the method of preparation of "combined" kolatannin, was well washed and dried at 100°. Combustion of this showed a carbon percentage intermediate between that of the second and third anhydrids of kolatannin.

As the solubilities of the anhydrids appear to be about the same, we were unable to effect a separation of them, and for this reason we heated the (supposed) mixture at 135°—140° to constant weight, in order to convert it all if possible into the third anhydrid. It was then subjected to another combustion with the following results:

	Found. I.	II.	Calculated for $(C_{16}H_{17}O_6)_2O$.
Carbon	61.27	61.46	61.54
Hydrogen	5.28	5.43	5.13
Oxygen	33.45	33.11	33.33

These results agree very well with the calculated formula and with those obtained by combustion of the third anhydrid of so-called "free" tannin of kola.

The identity of the tannin of caffein tannate with the free tannin having been positively settled by the analyses already given and by one or two evidences yet to be stated, it was deemed unnecessary to make a further comparative study of its bromin derivatives.

Action of Dilute Acids.

The experiments described as having been performed on "free" kolatannin were repeated on this kind of kolatannin also with parallel results. The same is to be said of the products of fusion with potassium hydroxid and of heating with glycerin.

Further Indications of Molecular Constitution.

Whether there be a carboxyl in kolatannin or not, remains open to question and to further determinations. Its moderate acid character is not inconsistent with the negative polarity of a polyhydric phenol reinforced by the oxygen of an anhydrid group, yet destitute of entire carboxyl. Our numerous analyses of kolatannin and its several derivatives as described in this paper are in close agreement with a polyhydric phenol anhydrid, carrying two methyl groups and one me-

thoxy group, but standing altogether as a di-addition benzene derivative, two such benzene nuclei pairing together in an ester-like anhydrid. On this supposition, a monomethyl di-hydrogen trihydroxy benzoic acid has paired ester-wise with a monomethyl methoxy di-hydrogen trivalent phenol. The di-additive benzene constitution is not improbable among plant constituents of this class, finding parallel in the additive structure of the terpenes. If we admit the hypothesis of the molecular formula above indicated, we must predicate that one of the six hydrogen atoms joined to benzene-carbon is in position somewhat unfavorable to its bromine substitution, and when brominated quite preventing the acetylization of one of the hydroxyls. Finally, it remains entirely without proof as to the distribution of the hydroxyl and methoxyl groups between the two benzene nuclei.

$$C_6H_3(CH_3)(OH)_3 \quad . \quad \begin{matrix} CO \\ | \\ C_6H_3(CH_3)(OCH_3)(OH)_2O \end{matrix} = C_{16}H_{20}O_8.$$

As to Chemical Bearings upon Pharmacology.

Finally it must be admitted that the stable caffein compound of an acid of such marked chemical individuality as that of kolatannin can by no means be assumed to have the same physiological effects as free caffein. And this subject is one of pharmacological importance for the caffein of all the beverage plants.

We are under many obligations to Mr. James Heggie, B. S., for his very efficient assistance in preparing and analysing the various derivatives of tannin reported in the preceding pages.

Discussion of Recent Assay Methods.

Within the past year two processes for the assay of kola have been offered, which seem to us not to be free from objections. We give below the essential points of these methods without entering into unimportant details.

Method of Jean.[34]

This author ascribes his plan of procedure in part to MM. Chodat and Chuit. He boils the dried and powdered drug with "milk of lime," dries the whole in an oven and powders it again. This powder is exhausted with chloroform, which removes the free alkaloids. The chloroform is evaporated to dryness, the residue dissolved in hot water and filtered. The filtrate is evaporated to dryness and weighed as caffein.

For "Kolanin": the drug after treatment with chloroform is extracted with alcohol, the alcohol evaporated from the percolate and the soft extract remaining is dissolved in boiling water, which solution after cooling is filtered. The insoluble matter remaining on the filter is dried in an oven and weighed as "kolanin".

The most serious defects in the above described method are (1) the boiling with "milk of lime," (2) the prolonged heating necessary to dry the drug after that treatment, (3) weighing the caffein instead of estimating it with Wagner's reagent volumetrically, (4) the means employed to separate so-called "kolanin," (5) estimating caffein kolataunate ("kolanin") by weight as such instead of by its caffein content.

[34] J. Jean, 1896: Repert. de Pharm. (3), 7, p. 49.

(1) Boiling with "milk of lime" or other aqueous alkalies tends to decompose caffein—a fact too well known to require further comment. This treatment also tends to liberate caffein from its tannate and thus prevents an exact determination of the proportion of "free" to "combined" alkaloids that originally existed in the drug. The starch of kola, amounting to nearly forty percent,[35] causes the drug to become of a jelly-like consistence when boiled with aqueous liquids, and when dried the mass is very hard to powder and even when powdered the condition of it is well calculated to resist the penetrating action of the solvent, and thus cause incomplete extraction.

(2) The gelatinous condition of the drug after boiling with "lime water" renders it hard to dry completely, and as very prolonged heating is necessary, there is danger of loss of caffein by sublimation.

(3) We do not consider that the alkaloids of kola are sufficiently pure when removed in this, the usual manner, to be weighed as such. Gomberg's[36] volumetric method gives more accurate results.

(4) If any caffein kolatannate escapes decomposition during the first part of the assay, which will occasionally happen, it is removed by the extraction with alcohol. But as it is somewhat soluble in water and more soluble in aqueous solutions containing tannin, the directions to collect and weigh the portion left undissolved by water will generally be found superfluous, for the small amount of it present will generally pass into and remain in solution. Dieterich[37] had this experience and met with nothing but disappointment in trying to estimate caffein kolatannate by this method.

(5) Caffein kolatannate has been shown to be a body of somewhat variable composition, with a caffein content ranging from 19 to 25 percent. Inasmuch as the value of kola as a stimulant depends primarily on its percentage of caffein, and as the weight of its caffein compound indicates only approximately the amount of its combined caffein, there would not seem to be any reason for attaching much importance to the weight of this compound, if a very precise valuation of the drug is desired. We hold that a direct estimation of the caffein of this compound is preferable, and at least as expeditious.

Method of Carles.[38]

Ten grammes kola, one gramme calcium hydroxid and twenty grammes 80 percent alcohol are mixed together and dried on the water bath until the weight is reduced to fourteen grammes. The mixture is then powdered and transferred to a 100 cc. flask containing 35 cc. of a mixture of 100 parts chloroform and 20 parts alcohol, and heated one hour on a water bath. After filtration the residue is extracted next with 20 cc. of the same solvent and finally with 10 cc. The united extracts are evaporated to dryness and the residue taken up with 10 cc. boiling water containing four or five drops of one percent sulfuric acid, then with 6 cc. and finally with 5 cc. The solutions are united, filtered, evaporated to constant weight and weighed as caffein.

[35] Knox and Schlotterbeck, 1895: Proc. Am. Pharm. Assoc., p. 334.
[36] M. Gomberg, 1896: J. Am. Chem. Soc. 18, p. 331.
[37] Dieterich, 1896: Ch. Centralbl. II, p. 675.
[38] P. Carles, 1896: Jour. de Pharm. et de Chim. 16, p. 104.

For "kolanin," which the author recognizes as caffein kolatannate, another sample of the drug is taken and extracted with water to remove the caffein and other soluble constituents. The drug is next extracted with 70 percent alcohol, the extract evaporated to dryness, transferred to a filter, washed with cold water, then dried at gentle heat and weighed. If it be desired to estimate the alkaloids of this compound, one gramme "kolanin," one gramme calcium hydroxid and three grammes chalk with a little 70 percent alcohol are mixed together and evaporated on the water bath to about six grammes, and extracted with alcoholic chloroform in the manner already described.

The objections to this method are in part among those already mentioned in the discussion of Jean's method. The use of lime or other alkalies in the assay of a caffein-bearing drug is to be deprecated. The solvent used is not a proper one for the reason that sufficient alcohol is present to extract other constituents in addition to the alkaloids, which are not removed from the caffein during the subsequent treatment of the residue and which when weighed with the caffein lead to erroneous results. Moreover, the manner of applying the menstruum is inconvenient, does not insure complete extraction and is in no way preferable to the ordinary extraction by the use of Soxhlet's apparatus. The addition of the sulfuric acid is unnecessary and does not add to the purity of the final product, which is dark colored and very plainly impure. The objection to weighing a final residue as caffein finds especial application in this method.

As the properties of caffein kolatannate had not been made known very generally at the time of the publication of these methods, there is some excuse for the assumption of both these writers that it is wholly insoluble. Carles has proceeded on this hypothesis in directing the drug to be extracted with cold water to remove the water-soluble constituents before exhausting it with alcohol to remove the caffein compound, but inasmuch as caffein kolatannate is not only somewhat soluble in water, but considerably more soluble in solutions of caffein and of tannin, the extraction of kola by water will remove a considerable amount of it. The same is to be said of the final washing of the caffein compound with water, which is quite inadmissable in quantitative work. Carles seems to have recognized the uncertain value of gravimetric determinations of caffein kolatannate, and is to be commended for offering an alternate method providing for its valuation according to the amount of its alkaloids.

At our request Mr. James W. Cobb, Ph. C., has assayed a sample of dried kola by each of the foregoing methods and by the method adopted by us last year[39] after thoroughly familiarising himself with them by preliminary work.

	Method of Jean.		Method of Carles.		Knox and Prescott.	
	I.	II.	I.	II.	I.	II.
Caffein by weight.....	1.93	1.79	2.16	2.33	.....	.....
The same titrated.....	1.83	1.71	1.87	1.98	1.96	1.88
"Kolanin".....	none	none	2.89	3.17	.....	.....
Combined alkaloids...		.....	.....	.....	1.62	1.61
Alkaloids of "kolanin".....		.....	.59	.69	.....	.....
Total alkaloids.....	1.83	1.71	2.46	2.67	3.58	3.49

[39] Knox and Prescott, 1896: Proc. A. Ph. A. 44, p. 136.

It will be seen that the impurity of caffein separated by Jean's method amounts to 4.84 percent and that of the caffein by Carles' method amounts to 14.25 percent, which was determined by titrating the caffein with Wagner's reagent, after Gomberg's method.

Both methods give very low results as compared with those obtained by our own. They are tedious and otherwise unsatisfactory, in addition.

Further notes on the assay of kola are in course of preparation.

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Ann Arbor, Michigan, July 3, 1897.

Alkyl Bismuth Iodides.

By *Albert B. Prescott.*

The common alkyl ammonium iodides, with solutions of the bismuth salts, give bright colored precipitates. As formed by quaternary methyl or ethyl ammonium iodide the color is orange-yellow in most cases, lighter in color when obtained with bismuth chloride, darker when obtained with bismuth nitrate. When fully formed by excess of the organic iodide, in bismuth solution not strongly acid, the precipitation is amorphous and so nearly complete that when the filtrate from a test-tube portion is evaporated to dryness and the residue ignited and treated with solvent acid, hydrogen sulphide fails to blacken the liquid. Strong mineral acids slowly decompose these colored precipitates, liberating iodine.

What has been known as Dragendorff's reagent for alkaloids is a potassium bismuth iodide, prepared by dissolving precipitated bismuth iodide in a concentrated solution of potassium iodide acidulated with hydrochloric acid, and known as giving reddish colored precipitates in solutions of the salts of the alkaloids. On trial with pyridine salts, a corresponding precipitate was obtained, dark orange-red and voluminous. Kraut[1] has reported the piperidine compound, to which all these are analogous.

These organic bismuth iodides are not perfectly proof against decomposition by much water; they are sparingly soluble in ethyl or amyl alcohol, insoluble in glacial acetic acid, in ethyl ether, in chloroform, and in benzene.

The tetramethyl ammonium bismuth iodide crystallizes from hydrochloric acid, that of sp. gr. 1.19 diluted with an equal measure of water. Also from potassium iodide solution acidulated with hydrochloric acid. The pyridine and the alkaloid bismuth iodides crystallize from alcohol. In all the cases the crystals are clearly hexagonal and easily obtained.

Both the amorphous and crystalline forms are stable in the air. A sample of tetramethyl ammonium bismuth iodide remained constant in weight at 130°; atropine bismuth iodide melts, but at 98° C. holds constant weight.

Reducing agents, as potassium thiosulphate, do not alter these bismuth iodides. Tetramethyl ammonium bismuth iodide, precipitated from ten percent solutions, both of the organic iodide and

[1] Ann. Chem. (Liebig) 210, pp. 310—327.

bismuth iodide, washed with hydrochloric acidulated water, then with pure water till washings gave no residue, then with alcohol and lastly with ether, and dried at 110°, gave figures as follows.

Analyses I and II were of the same preparation, III and IV from other preparations made at different times.

	I.	II.	III.	IV.	$N_3(CH_3)_{11}HBi_2I_7$.
Iodine	58.71	58.29	60.79		59.22
Bismuth	27.08				27.07
Carbon	8.69	8.68	8.58	8.06	8.82
Hydrogen	2.16	2.12	2.30	2.37	2.08
Nitrogen	2.81	2.73			2.81

The pyridine bismuth iodide, prepared from a pyridine salt by Dragendorff's reagent and crystallized from alcohol, on elementary analysis gave figures as follows:

Different preparations:	I.	II.	III.	$(C_5H_5N)_3HI)_3Bi_2I_6$.
Iodine	63.98	62.84	62.24	63.59
Bismuth	23.36	23.72		23.18

Kraut (Ann. 210, pp. 310—327) found analogous composition for piperidine bismuth iodide.

The corresponding atropine bismuth iodide gave results as follows:

Several preparations:	I.	II.	III.	$(C_{17}H_{23}NO_3)_3(HI)_3Bi_2I_6$.
Iodine	46.99	47.03	46.51	46.96
Bismuth	18.82	18.67	18.53	17.22
Carbon	23.22	23.62	23.69	25.23
Hydrogen	2.87	3.02	2.94	2.96

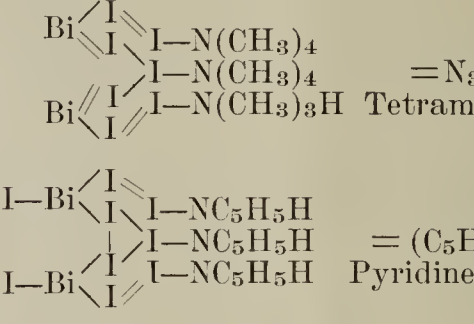
The carbon is too low for the theory, so that the figures approach to those of $(C_{17}H_{23}NO_3)HI)BiI_3$.

The brucine compound gave, for $(C_{23}H_{26}N_2O_4)_3(HI)_3Bi_2I_6$, of iodine 41.10 and 40.88 percent against 41.56 by calculation from the formula.

The corresponding strychnine salt gave, of iodine, 44.02 and 44.65 percent against 44.48 by calculation from the formula.

In the results of the work upon the perhalides and double halides of nitrogen bases, undertaken in the last two or three years, everything goes to support the theory that two or more halogen atoms link to each other with an (uneven) valence of more than one, so as to connect one group of atoms with another. Iodine especially among the halogens serves as a binding element in the coupling of molecules, or groups, with each other, as well as in massing many iodine atoms together in a heavy periodide, as a swarm of bees hangs upon the bough of a tree. In the double iodide structure, where iodine links one base to another base, serving between positive and positive, with iodine not in excess of the "normal" number of its atoms, potassium thiosulphate will not take iodine out of the compound. In the periodide structure, where iodine links a base to additive iodine, serving between a positive and a negative group, potassium thiosulphate promptly removes all the additive iodine, leaving a normal single iodide. These generalizations apply to the dipyridine alkyl iodides reported, with determination of molecular weight, by Mr. Flintermann and myself in 1895.[2] Also to the various monopyridine alkyl normal iodides[3] and to the numerous periodides.[4] In the compounds of additive iodine, as in double iodides, the results of analysis are in most cases consistent with an uneven valence of iodine, indeed with its trivalence. But there are a very few periodides well determined by Mr. Trowbridge as monopyridine compounds, in which, in our present knowledge, an even numerical valence of iodine is indicated.[5]

The bismuth iodides of nitrogen bases reported in this paper, both those of fatty alkyls on the one hand and those on the other hand of pyridine and pyridine-derived alkaloids, all evidently conform in their analytical content to the regular iodine-linking structure, the structure common both to double iodides and periodides as shown in the following proposed constitutional formulæ. In the case of the quaternary ammonium bismuth compounds, with the prevailing bismuth characteristic of losing halogen in presence of water, the wash-water being found tinged with iodine, each bismuth atom is directly bound to only two atoms of iodine, while in the pyridine-formed compounds the bismuth atom is bound to three atoms of iodine in each instance, bismuth and iodine valences being always the same. Again, the fatty ammonium compounds, less stable as they are, show a variation from the quaternary to the tertiary base type, in one of the three nitrogen base groups of the molecule. This doubtless comes about by reaction of water to form methyl alcohol as by-product, leaving hydrogen in place of methyl in the main-product.



Analogous to
$(C_{17}H_{23}NO_3)_3(HI)_3Bi_2I_6$.
Atropine bismuth iodide.

It appears, therefore, that **the bismuth iodides of organic nitrogen bases** constitute a distinct class of compounds, with marked physical properties and a constitution of much chemical interest. As a combination it is the more noteworthy, because bismuth and nitrogen are the members most remote from each other in the same family of elements.

The alkaloidal bismuth iodides are not quantitatively uniform enough to be entirely satisfactory for alkaloidal assay, but are more stable and uniform than the alkaloid mercuric iodides formed by Mayer's reagent. On the other hand, they are more bulky, less easy to gather into compact mass, less managable in filtration. On the whole, so far as found, Dragendorff's reagent gives no general advantage over that of Mayer, though I am well aware how unsatisfactory the latter has been found in the hands of analysts.

For the execution of the work upon tetramethyl ammonium bismuth iodide, I am wholly indebted to Mr. H. E. Brown; for that upon the bismuth iodides of pyridine and the alkaloids, to Mr. O. C. Diehl. A further study of the reactions of the halides of bismuth and related metals upon representative organic bases is now left to Mr. Brown.

Ann Arbor, Mich., Augnst, 1897.

[2] J. Am. Chem. Soc. 18, p. 28.
[3] Prescott and Baer, 1896: J. Am. Chem. Soc. 18, p. 247.
[4] Prescott and Trowbridge, 1895: J. Am. Chem. Soc. 17, p. 859; P. F. Trowbridge, 1897: J. Am. Chem. Soc. 19, p. 322; Trowbridge and Diehl, 1897: J. Am. Chem. Soc. 19.
[5] Trowbridge, 1897: J. Am. Chem. Soc. 19, p. 330.

Popular Scandinavian Names of Drugs and Medicines.*

By *Harold Braun.*

Eddikesurt Kali,	Potassium acetate.
" Kobber,	Copper acetate.
" Magnesia,	Magnesium acetate.
" Morphin,	Morphine acetate.
" Natron,	Sodium acetate.
" Zink,	Zinc acetate.
Eddike spanskflue,	Vinegar of cantharides.
" strandlög,	" of squills.
Egebark,	White oak bark.
Egenödder,	Acorn.
Egenödkaffe,	Acorn coffee.
Elmetrae,	Elm.
Elixir antiasthmaticum Aaskovi,	*Tinct. digitalis rubra.*
Enebaer,	Juniper berries.
" olje,	Oil of juniper berries.
" empyrematisk,	Oil of juniper, empyrematic.
Enerbaertraeolje,	Oil of juniper wood.
Enerbaerthe,	Juniper tea.
Engelsk Heftplaster,	Court plaster.
" Blegpulver,	Chlorinated lime.
" Salt,	Magnesium sulphate.
" Charpi,	Lint.
Enzianrod,	Gentian root.
" tinctur,	Tincture of gentian.
Extract Aconit,	Extract of aconite.
" Braekrod,	" of ipecac.
" Bregnerod,	" of male fern.
" Bomuldrodbark,	" of cotton root.
" Bulmeurt,	" of henbane.
" Bridsel,	" of log wood.
" Enzianrod,	" of gentian.
" Raevekage,	" of nux vomica.
" Rhabarber,	" of rhubarb.
" Fingerbölleblade,	" of digitalis.
" Lövetand,	" of taraxacum.
" Lakrits,	" of licorice.
Faaretalg,	Mutton tallow.
Faeldet Kridt,	Precipitated carbonate calcium.
Falsk Senna,	Bladder senna.
Feberurt, amerikansk,	Fever root.
Fedt, Björne,	Bears' grease.
" Svine,	Lard.
Fennekelfrö,	Fennel seed.
" olje,	Fennel oil.
" vand,	Fennel water.
Fersken,	Peach.
Figen,	Fig.
Fingerbölle blade,	Digitalis leaves.
" tinctur,	Tincture of digitalis.
Fiskeben, hvid,	Fish bone (*Ossa sepiæ*).
Fiskekjerner,	Fish berries.
Fluer, spansk,	Cantharides.
Flueswamp,	Fly fungus (*Agaricus muscarius* L.).
Fordelende urter,	*Species resolventes.*
Fortyndet Chlorvandstofsyre,	Hydrochloric acid, dil.
Fortyndet Phosphorsyre,	Phosphoric acid, dil.
" Salpeter-aether,	Sweet spirits of nitre.
Fortyndet Svovlsyre,	Sulphuric acid, dil.
Frö, Bukkehorn,	Fenugreek.
" Bulmeurt,	Henbane seed.
" Hampe,	Hemp seed.
" Hör,	Linseed.
" Kanarie,	Canary seed.
" Kardemome,	Cardamom seed.
" Luse,	Sabadilla seed.
" Orme,	Worm seed.
" Petersille,	Parsley seed.
" Pigaeble,	Stramonium seed.
" Roe,	Rape seed.
" Tidlöse,	Colchicum seed.
" Vandfennekel,	Water hemlock.
Fruehaar,	Venus hair (*Adiantum capillus Veneris* L.).
Frugter, Valmue,	Poppy.
Fyrswamp,	Surgeons agaric (*Polyperus fomentaries* Fries).
Galaebler,	Nutgall.
Galaeblesyre,	Tannic acid.
Galangarod,	Galanga root.
Gambir-katchu,	Pale catechu.
Galmeiesten,	Calamine.
Garver-sumak,	Curriers' sumach.
Garvesyre,	Gallic acid.
Gentianrod,	Gentian root.
Gibs, braendt,	Plaster Paris.
Gigtpapir,	Antirheumatic paper.
Gift-sumak,	Poison oak.
Gilleniarod,	American Ipecac.
Gjedeurt,	Goats' rue.
Gjaer,	Ferment, yeast.
Gjögemad,	Oxalis.
Gjögesyre,	"
Glasurt,	Wall pellitory.
Goepulver,	Goa powder.
Granataebler,	Pomegranate.
Granataeblerodbark,	Pomegranate root bark.
Graeskarfrö,	Pumpkin seed.
Grön Vitriol,	Sulfate of iron, impure.
Guajac-harpix,	Guaiac resin.
Guajactrae,	Guaiac wood.
Guldsvovl,	Sulphide of antimony.
Guds Raades Urt,	Hedge hysop.
Gulerod,	Carrot.
Guldris,	Golden rod.
Gult Vox,	Yellow wax.
Gummi, Ammoniak,	Gum resin ammoniac.
" Arabisk,	Acacia.
" Gutt,	Gamboge.
" Lacca,	Shellac.
" Slim,	Mucilage.
" Tragacant,	Gum tragacanth.
Gurgemerod,	Tumeric.
Haller sure Draaber,	*Liquor acidus Halleri.*
Hampefrö,	Hempseed.
Hamp, Canadisk,	Canadian hemp.
" Indisk,	Indian hemp.
" Nesle,	Hemp nettle.
Hanefodurt,	Crowfoot.
Harpix, Guaijak,	Guaiac resin.
" Jalapa,	Jalap resin.
" Kino,	Kino.
" Salve,	Resin cerate.
Havregryn,	Oat meal.
Heftplaster,	Courtplaster.
Helvedsten,	Silver nitrate.
Hestehale,	Horsetail.
Hestehovblade,	Colts foot.
Hestekastaniebark,	Horsechestnut bark.
Hestemynte,	Horsemint.

* Copyrighted. Continued from p. 200.

Hestemynteolje,	Horsemint oil.
Hesterumpe,	Horsetail.
Hexemel,	Lycopodium.
Hjertestyrkende Draaber,	Compound spirit of lavender.
Hjortetakdraaber,	*Liquor cornu cervi succin.*
" salt,	Ammonium carbonate.
Hoffmannsdraaber,	Hoffmann's anodyne.
" röde,	*Balsamum vitæ Hoffmanni.*
Honning,	Honey.
" renset,	Honey, pure.
Hostemixtur,	Cough mixture.
Hostepulver,	*Massa pilulæ cinoglossæ.*
Hostesaft,	Cough syrup.
Hylde blomster,	Elder flowers.
" the,	" "
" vand,	Elder flower water.
Humle,	Hops.
Hundegraes,	Cough grass.
Hunderose,	Dog rose.
Hundetunge,	Hound's tongue.
Hundetrae,	Dogwood.
Hundredbladet Rose,	Hundred-leaved rose.
Husblas,	Isinglass.
Hvalrav,	Spermaceti.
" salve,	" salve.
Hvid Camphorolje,	Camphor liniment.
" Kviksölvpræcipitat,	White precipitate.
" Mixtur,	Chalk mixture.
" Spansk Saebe,	Castile soap, white.
" Lög,	Onion.
" Vox,	White wax.
" Vitriol,	Zinc sulfate.
Hvedestivelse,	Wheat starch.
Högblomster,	Hawk weed.
Hörfrö,	Linseed.
" mel,	Linseed meal.
" " omslag,	Linseed poultice.
" olje,	Linseed oil.
Igle,	Leech.
Ignatiusbönner,	St. Ignatius bean.
Iberiskarse,	Peppergrass (*Lepidium iberis* L.).
Infus,	Infusion.
" pomerants skaller,	" of orange peel.
" sennablade,	" of senna leaves.
Indigo, vild,	Wild indigo.
Indisk Hamp,	Indian hemp.
" Sarsaparillerod,	Indian sarsaparilla root.
Indisk Urt,	Wild yam.
Indspröitning,	Injection.
Ingefaer,	Ginger.
" tinctur,	Tincture of ginger.
Islandsk Lav,	Iceland moss.
" Mos,	Iceland moss.
Isop,	Hyssop.
Jalapaharpix,	Jalap resin.
Jalaparod,	Jalap.
Jamaikapeber,	Allspice.
Jern-ammoniak, citronsurt,	Iron and ammonium citrate.
Jern-ammoniak, svovlsurt,	Sulfate of iron and ammonium.
Jerncitrat,	Iron citrate.
Jernchinavin,	*Vinum chinæ ferr. ph. N.*
Jern, dialyseret,	Dialysed iron.
Jernets Testamente,	*Spec. ad long vitum.*
Jernoxyd,	Iron oxide.
" melkesurt,	Iron lactate.
Jernjodid,	Iron iodide.
Jernoxydul, arseniksurt,	Iron arsenite.
" chinin-citronsurt,	Iron and quinine citrate.
" strychnin-citronsurt,	Iron and strychnine citrate.
" baldriansurt,	Iron valerianate.
" citronsurt,	Iron citrate.
" kulsurt,	Iron carbonate.
" kulsurt, med sukker,	Saccharated iron carbonate.
" fugtigt (hydrat),	Hydrated iron oxide.
" oxalsurt,	Iron oxalate.
" phosphorsurt,	Iron phosphate.
" svovlsurt,	Iron sulphate.
Jern, reduceret,	Reduced iron.
Jernplaster,	Iron plaster.
Jernoxydul-ammoniak, vinsurt,	Iron and ammonium tartrate.
Jernoxydul-kali, vinsurt,	Iron and potassium tartrate.
Jernoxydul, magnetisk,	Magnetic iron oxide.
Jernvinsten,	Iron and potassium tartrate.
Jernvitriol,	Iron sulfate, impure.
Jod,	Iodine.
Jod-ammonium,	Ammonium iodide.
" bly,	Lead iodide.
" kadmium,	Cadmium iodide.
" jernpiller,	*Pilulæ ferri iodati* Ph. N.
" kalium,	Potassium iodide.
" methyl,	Methyl iodide.
" natron,	Sodium iodide.
" stivelse,	Starch iodide.
Jodvandstofsyre,	Hydriodic acid.
Johannesbröd,	St. John's bread.
Jordrög,	Fumitory.
Jödekirsebaer,	Wintercherry.
Kaffe,	Coffee.
Kaffebönner.	Coffee beans.
Kalk, braendt,	Calcium oxide.
Kalk,	Lime.
" Chlor,	Chlorinated lime.
" Jod,	Calcium iodide.
" precipiteret,	Precipitated calcium carbonate.
" underphosphorsyr-	Calcium hypophosphite.
" liniment, [lig,	Lime liniment.
" vand,	Lime water.
Kalmusröd,	Sweet flag.
Kajeputolje,	Cajeput oil.
Kalabarbönner,	Calabar beans.
Kainkarod,	Cahinca root.
Kakao bönner,	Cacao beans.
" smör,	Cacao butter.
Kalium, Brom,	Potassium bromide.
" Ferrocyan,	" ferrocyanide.
" Jod,	" iodide.
" Chlor,	" chloride.
" Svovl,	Sulphureted potassa.
" underphosphorsyrlig,	Potassium hypophosphite.
Kali, citronsurt,	Potassium citrate.
" chlorsurt,	" chlorate.
" eddikesurt,	" acetate.
" kaustisk,	Caustic potash.
" manganoversurt,	Potassium permanganate.
" phosphorsurt,	Potassium phosphate.
" svovlsurt,	" sulphate.
" svovlsyrligt,	" sulphite.
" dobbelt chromsurt,	" bichromate.

(To be continued.)

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.*

By *Edward Kremers.*

On the same day the "Seebote" contains an unsigned communication, the author of which could not be ascertained thus far. [*Document 7.*] The author not only criticizes the style of the first communication in the "Seebote," but considers the demands to be made on the future druggist as excessive. He is of the opinion that the chemical factories had greatly simplified the duties of the druggist, that the danger of an error would be greatly diminished if physicians were compelled to write distinctly, and that the time had passed when people regarded an illegible recipe as something bordering on the miraculous.

Meanwhile, a number of other druggists began a counter demonstration. Just what the motives of these men were it has been impossible to ascertain thus far. Possibly these lines will cause one or more of them to make known who began this counter movement. One of the prime motives of the persons initiating this counter movement seems to have been the desire to have all persons at that time occupied in the retail drug business included in a city organization or recognized by any legislative act that might result from such organized effort.

Pharmacy of Mr. Stotzky in Klattau. Equipped in 1733.
(From a photograph. Peters: Aus Pharm. Vorzeit, I, p 82.)

On Friday, Sept. 17, the "Banner und Volksfreund" briefly calls attention to this counter-demonstration. [*Document 8.*] Whereas the reporter seems to regret that the men who originated the movement should have made enemies among their own fraternity by so doing, he also realizes the necessity for more general action. "It is of little use", he says, "if twenty apothecaries who are members of the society live up to their rules, while thirty others pay no attention whatever to them." A meeting appears to have been held on this day. Where it was held and who were its officers the writer has been unable to learn thus far. It is possible also that one or several druggists wrote the petition, later on submitted to the Common Council, and secured the signatures of the other druggists.

The petition just referred to and signed by twenty-four druggists (not twenty-two as the "Sentinel" states) appeared in various papers on Saturday the 18th. Naturally one may suppose that the petition addressed to the Common Council was written in the English language. It is therefore probable that the petition as given by the "Sentinel" [*Document 9.*] is the original one.* The account in the German papers, viz. in the "Seebote" [*Document 10.*], "Germania" [*Document 11.*], and "Banner und Volksfreund" [*Document 12.*], differ from each other in the wording of the petition. There is sufficient similarity of wording in the accounts given by the "Seebote" and "Germania" to lead one to suspect that a translation was submitted to the German papers, but that the editors used their own discretion in the matter of style. Possibly the account in the "Seebote" is the translation as submitted by the druggists.

On the following Monday, September 20, the petition was presented to the Common Council [*Document 13.*] and by it referred to the Board of Health and the City Attorney. The printed Proceedings of the Common Council do not indicate that the petition gave rise to questions or comment at this time. The various daily papers in reporting the proceedings of the council also make but a matter-of-fact report of the event. [*Document 14.*]

Document 7.

[*Der Seebote*, d. 17. Sept. 1875. (p. 4; col. 3.)]

(Eingesandt).

In diesen Tagen erschien in den deutschen Zeitungen Milwaukee's ein „Eingesandt," das wohlgeeignet war, die gebildete deutsche Gesellschaft unserer Stadt in eine gelinde Aufregung zu versetzen. Man las da nämlich einen Aufruf von zehn Apothekern, die sich selbst die prominentesten Milwaukee's nennen, unterzeichnet, der in einem Deutsch abgefasst war, wie man es wohl selten gedruckt findet; wenn ein Mann seine Gedanken auf dem Papier festsetzen will, um sie gedruckt der Oeffentlichkeit zu übergeben, sollte es doch wenigstens immer in einem Styl geschehen, vor dem kein Quintaner zu erröthen gezwungen wäre; wird nun aber von zehn gebildeten Männern ein Aufruf in einer solchen Fassung an viele andere gebildete Männer öffentlich erlassen, was müssen da in einem unbefangenen Deutschen, dem seine Muttersprache noch wirklich am Herzen liegt, für trostlose Gedanken unwillkürlich aufsteigen? In früheren Zeiten war es solchen Leuten, die sich durch ihre, oft

* Continued from p. 203.

* Attempts made to secure the original petition in the city clerk's office have not been successful.

nur eingebildete, Gelehrsamkeit vor der grossen Menge auszeichnen wollten, eigen, Sätze zu konstruiren, deren Sinn anderen Leuten erst nach langem Nachdenken, manchmal auch selbst dann nicht klar wurde, jedoch findet man bei den Schlimmsten dieser Art, eine, wenn auch noch so eine verschrobene, Konstruktion. Aber in besagtem „Eingesandt" war von Satzbildung keine blasse Spur. Ei! ei! ihr Herren, wohin soll's Volk gerathen, wenn von den „Gelehrten" der Nation die Muttersprache so misshandelt wird?

Was den Inhalt des genannten verunglückten Schriftstücks anbetrifft, so kommt dem Einsender dieses, der zwar kein Apotheker, jedoch mit der amerikanischen Apothekerei ziemlich vertraut ist, eine Forderung desselben höchst sonderlich vor. Wesshalb wird von denen die dem Verein beitreten wollen, eine fünfzehnjährige absolute Recepturthätigkeit oder ein Staatsexamen verlangt? Eine fünfzehnjährige Recepturthätigkeit! Wenn ein junger Mensch mit einer einigermassen guten Schulbildung nicht im Stande ist, binnen fünf Jahren das zu lernen, was zur selbständigen Führung einer Apotheke hier in Amerika nothwendig ist, dann lernt er's überhaupt nicht. Jeder der die Art und Weise, wie hier die Medizinen zubereitet werden, kennt, Jeder, der weiss, wie sehr die jetzt bestehenden chemischen Fabriken das Geschäft des Apothekers vereinfacht haben, wird diesem Urtheil beipflichten müssen. Sehr wünschenswerth wäre, dass die Herren Aerzte sich bei Abfassung ihrer Recepte einer deutlicheren Handschrift befleissigen möchten, dadurch könnte vielen Missgriffen vorgebeugt werden, und sollte auf Beseitigung dieses Zopfes, der von Alters her noch an der medizinischen Wissenschaft herumbummelt, vor allen Dingen von den Betheiligten hingearbeitet werden.

Die Zeiten, in denen das Publikum vor einem unlesbaren Zettel ehrfurchtsvoll staunend stand, ja in den es glaubte, von wirklich guten und gelehrten Aerzten würden nur solche Zettel geschrieben, sind hoffendlich endlich einmal vorüber. Also, was die Aufnahme in den Verein anbetrifft, so wäre an dieser Stelle vorläufig nur noch darauf aufmerksam zu machen, dass es gerade hier in Milwaukee viele recht tüchtige und durchaus gewissenhafte Apotheker giebt, die zwar kein Examen gemacht und auch noch nicht fünfzehn Jahre hinter'm Recepturtische gestanden haben, die jedoch seit Jahren ihre Apotheken zur grössten Zufriedenheit des betreffenden Publikums verwaltet. Warum sollen diese von dem Verein ausgeschlossen werden? — —

Document 8.

[*Banner und Volksfreund*, Freitag, 17. Sept. 1875. (p. 4, col. 5.)]

Die Apotheker haben, wie im „Banner" bereits gemeldet, zum Schutze des Publikums einen Verein gegründet, der kaum entstanden ist und schon angefeindet wird. Der von den Herren Apothekern angestrebte Schutz lässt sich allgemein nur im Wege der Gesetzgebung durchführen. Es nützt wenig, wenn zwanzig Vereinsapotheker die Satzungen des Vereins befolgen und dreissig andere sich nicht daran kehren.

Document 9.

[*Sentinel*, Saturday, Sept. 18, 1875. (p. 8, col. 2.)]

Qualified Druggists.

Twenty-two of the most prominent drug firms of the city have signed the following petition to the Common Council:

We, the undersigned druggists of the city of Milwaukee, would respectfully represent that a suitable law be passed in this city, regulating the keeping of shops for the purpose of retailing drugs, medicines and such chemicals as are used in compounding medicines; and persons engaged in the business of compounding and putting of prescriptions of physicians, and vending medicines, either as proprietor, agent or assistant, without first having obtained a certificate of qualification and competency, after due and impartial examination for such business by a board of commissioners to be provided for such purpose, consisting of three physicians and one druggist, and the undersigned do further pray that the laws now existing regulating the sale of poisons be strictly enforced.

The great number of errors now occurring in compounding physicians' prescriptions and in vending medicines, which have produced so many fatal results throughout the United States are always caused by persons incompetent to be in a drug store, and many such mistakes and deaths will occur in the future, unless suitable laws are passed, with heavy fines attached, preventing incompetent persons to engage in such business.

[No signatures.]

Document 10.

[*Der Seebote*, Samstag, 18. Sept. 1895. (p. 4, col. 3.)]

An den ehrenwerthen Mayor und Common Council von Milwaukee.

Unterzeichnete Apotheker hiesiger Stadt ersuchen Sie, dahin zu wirken, dass ein passendes Gesetz erlassen werde, welches den Detailverkauf von Droguen, Arzneien und Chemikalien in Milwaukee regulirt.

Ferner, das sämmtliche Personen, welche dem Apothekerberufe hier nachkommen, von einer kompetenten Kommission examinirt werden, um zu konstatiren, ob dieselben die zu diesem Geschäfte nöthigen Fähigkeiten besitzen. Zum Schutze des Publikums halten wir obige Massregeln zweckmässig.

Achtungsvoll

John H. Tesch,	H. C. Beverung,
J. N. Morton,	H. J. L. Meyer,
J. M. Allcott,	Rudolf Mieding,
Henry Fess, Jr.,	Otto Schorse,
E. L. Babcock,	A. F. Kalkhoff,
John A. Dadd,	Theo. Mueller,
L. H. Wehmer,	H. Hackendahl,
P. L. Dolmen,	Dr. C. Weise,
Louis Kalkhoff,	Strohmeyer & Co.,
J. Vertessy,	F. Esau;
Christian Widule,	Amand Wirth,
G. T. Platzer,	Chas. J. Engel.

Document 11.

[*Germania*, Samstag, 18. Sept., 1875. (p. 3, col. 2.)]

An den ehrenwerthen Mayor und Stadtrath von Milwaukee.

Unterzeichnete Apotheker hiesiger Stadt ersuchen Sie, dahin zu wirken, dass ein passendes Gesetz erlassen wird, welches den Kleinverkauf von Droguen, Arzneien und Chemikalien in Milwaukee genau festgestellt.

Ferner, dass sämmtliche Personen, welche das Apothekergewerbe hier betreiben, von einer aus Fachkennern bestehenden Commission geprüft werden, um zu sehen, ob dieselben die zu diesem Geschäfte nöthigen Fähigkeiten besitzen. Zum Schutze des Publikums halten wir obige Massregel für zweckdienlich.

Achtungsvoll

[Same signatures as in Seebote, but Wiese, not Weise.]

Document 12.

[*Banner und Volksfreund*, Samstag, 18. Sept. 1875. (p. 4, col. 3.)]

Das Apothekergewerbe.

Es ist unter den hiesigen Apothekern eine Bewegung im Gange, welche eine allgemeine gesetzliche Ueberwachung des Gewerbes insoferne anstrebt, als jeder Apotheker sich einer Prüfung zu unterziehen hat, ehe ihm die Ausübung des Gewerbes gestattet wird. Wir überzeugten uns gestern, dass die meisten Apotheker, deutsche und englische, an der Bewegung Theil nehmen.

Sie richteten folgende Zuschrift an den Mayor und Stadtrath:

Die Unterzeichneten, Apotheker in der Stadt Milwaukee, stellen Ihnen achtungsvoll vor, dass ein zweckdienliches Gesetz zur Regelung des Kleinhandels mit

Droguen, Arzneien und solcher Chemikalien, welche bei der Zusammensetzung von Arzneien Verwendung finden, erlassen werden sollte. Alle bei dem Gewerbe mit der Anfertigung von Medizinen nach ärztlichen Recepten beschäftigte Personen, sei es als Eigenthümer, Agent oder Gehilfe, müssen sich einer gründlichen und unparteiischen Prüfung vor einer zu diesem Zwecke aufgestellen Prüfungscommission unterziehen, bestehend aus drei Aerzten und einem Apotheker. Die Unterzeichneten bitten ferner, dass die zur Regelung des Gift Verkaufes in Kraft bestehenden Gesetze strenge vollstreckt werden.

Die bei der Anfertigung und beim Verkaufe von Arzneien in ganz Amerika sehr häufig vorkommenden Verstosse, welche oft die schrecklichsten Folgen nach sich ziehen, geschen von Personen, die für das Apothekergewerbe nicht tauglich sind. Wenn dem Unfug auf gesetzlichem Wege und unter Androhung schwerer Strafen nicht begegnet wird, so werden Todesfälle in Folge von Verstössen bei der Arzneibereitung stets zu beklagen sein.

[Same signatures as in Seebote but in different order.]

Document 13.

[Proc. of the Com. Council of the Cy. of Milw. for the year ending Sept. 20, 1875, p. 166.]

Petitions presented.

By this chair, from John H. Tesch and other druggists of the city, which represented that a law should be passed to regulate in this city, the sale of drugs and medicines, and the compounding of physicians' prescriptions, and issuing of certificates to all persons employed therein, and praying that the laws regulating the sale of poisons, should be strictly enforced.

Referred to the Board of Health and the City Attorney.

[*Banner und Volksfreund*, Dienstag, 21. Sept. 1875. (p. 4, col. 2.)]

Stadtverwaltung.

Ein Gesuch von hiesigen Apothekern um Einsetzung einer Commission zur Prüfung von Apothekern und strikte Durchführung der bezüglich des Gifteverkaufs bestehenden Gesetze. Das Gesuch wurde verflossene Woche bereits wörtlich im „Banner" veröffentlicht. An den Gesundheitsausschuss und den Stadtanwalt verwiesen.

Document 14.

[*Sentinel*, Tuesday morning, Sept. 21. 1875. (p. 3, col. 2.)]

The Council.

The memorial of J. H. Tesch, and other prominent druggists, for strict regulations of the sale of poisons, was received and referred.

[*Germania*, Dienstag, 21. Sept., 1875. (p. 3, col. 2.)]

Stadtraths-Verhandlungen.

Eine Petition von Apothekern dieser Stadt für Erhaltung eines Gesetzes zur Regulirung des Verkaufs und der Zusammensetzung von Medizinen. An das Justizcomite, den Stadtanwalt und den Gesundheitsrath verwiesen.

[*Herold*, Sept. 21, 1897, (p. 3, col. 4).]

Stadtverwaltung.

Ferner wurde von Herrn Benjamin folgende Petition eingereicht:

An den ehrenwerthen Mayor und Common Council von Milwaukee.

Unterzeichnete Apotheker hiesiger Stadt ersuchen Sie, dahin zu wirken, dass ein passendes Gesetz erlassen werde, welches den Detailverkauf von Droguen, Arzneien und Chemikalien in Milwaukee regulirt.

Ferner, dass sämmtliche Personen, welche dem Apothekerberufe hier nachkommen, von einer competenten Commission examinirt werden, um zu constatiren, ob dieselben die zu diesem Geschäfte nöthigen Fähigkeiten besitzen. Zum Schutze des Publikums halten wir obige Massregeln für zweckmässig.

Achtungsvoll
(folgen die Unterschriften).

An den Board of Health und den Stadtanwalt verwiesen.

[*Seebote*, d. 22. Sept. 1875, (p. 4, col. 4.)]

Stadtrathsverhandlungen.

Der Vorsitzer unterbreitete eine Zuschrift von John H. Tesch und anderen Apothekern, worin es heisst, dass behufs Regelung des Verkaufs von Droguen und Arzneien, der Zubereitung von Arzneien nach ärztlichen Rezepten und der Ausstellung von Zertifikaten an alle im Apothekerfache beschäftigten Personen dahier ein Gesetz erlassen werden sollte. Gleichzeitig wird um Durchführung der den Giftverkauf betreffenden Gesetze ersucht.

Der Sanitätsbehörde und dem Stadtanwalt zugewiesen.

(To be continued.)

Chemical Bibliography of Morphine. 1875—1896.*

By *H. E. Brown*, B. S.

Godefroy, R. 1877.

Arch. der Pharm. (3), 9, p. 434; J. Chem. Soc. 32, p. 365; Ber. 9, p. 1792.

Some New Reactions for Alkaloids.

A precipitate is produced by adding stannous chloride to a hydrochloric solution of morphine. It has the following composition: $SnCl_2.C_{17}H_{19}NO_3HCl$.

Schmidt, Ernst. 1877.

Ber. 10, p. 194; J. Chem. Soc. 17, p. 343; Chem. Centrbl. 1877, p. 247.

Morphine Hydrobromide and Hydriodide.

Statements as to the solubility and composition of these salts being quite contrary to each other, the author makes an examination of them and finds that the hydriodide has the composition $C_{17}H_{19}NO_3.HI + 2H_2O$. The crystals are sparingly soluble in cold and more freely in hot water.

Morphine hydrobromide has a similar composition and solubility.

Pellagri, G. 1877.

Gazz. chim. ital. 7, p. 297; J. Chem. Soc. 17, p. 808; Ber. 10, p. 1384; Chem. Centrbl. 1877, p. 662; Pharm. J. Trans. 8, p. 570.

New Reaction for Morphine.

Characteristic color reactions are produced by dissolving in concentrated hydrochloric acid and then adding sulphuric acid and evaporating at 100°—120° on an oil bath.

Buri, E. 1878.

Ztschr. anal. Chem. 17, p. 185; J. Chem. Soc. 34, p. 755; Chem. Centrbl. 1878, p. 691.

Testing for Morphine.

Spontaneous evaporation of the amyl alcohol solution of morphine is preferred to the Stas-Otto method, for large and well-developed crystals are obtained by the former procedure.

Blyth, A. Winter. 1878.

J. Chem. Soc. 33, p. 313; Ber. 11, p. 996.

The Temperatures at Which Some of the Alkaloids Sublime as Determined by an Improved Method.

A subliming cell is used consisting of two microscopical discs and a ground glass ring placed between them, the whole resting on a metallic solid into which the bulb of the thermometer dips.

Morphine at 150° clouds the upper disc with nebulæ or dots of the sublimed substance; at 188° crystals are formed.

* Continued from p. 205.

Lindo, D. 1878.
Chem. News 37, p. 158; J. Chem. Soc. 34, p. 678; Ber. 11, p. 997.

Action of Ferric Chloride and Sulphuric Acid on Opium Bases.

By treating a small quantity of morphine with sulphuric acid and ferric chloride and gently heating, an intense indigo blue coloration is produced.

Lindo, D. 1878.
Chem. News 38, p. 65; J. Chem. Soc. 34, p. 1013.

Morphine Reactions.

A test solution of copper sulphate in ammonia is prepared according to specific directions. This gives with neutral morphine sulphate a distinctive color.

Phenol is the only colorless organic compound which gives a similar color reaction.

Greenish, H. G. 1878.
Pharm. J. Trans. 9, p. 240.

Morphine Reaction.

The author points out that the new reaction given by Lindo is a reaction that was reported by Nadler in 1873.

Schiff, H. 1878.
Ber. 11, p. 834; J. Chem. Soc. 34, p. 668.

Aldehyde Derivatives of Amides and Carbamides.

Vegetable alkaloids do not form aldehyde derivatives.

Heintz, E. 1878.
Ztschr. anal. Chem. 1878, p. 166; J. Chem. Soc. 34, p. 613; Ber. 11, p. 984.

Detection of Organic Poisons.

The author recommends the use of purified bole for solutions from which the alkaloids are to be extracted. He claims that fatty, resinous and other adhesive bodies are thus removed.

Lynn, J. 1878.
Am. J. Pharm. (4), 6, p. 358; Chem. Centrbl. 1878, p. 158; J. Chem. Soc. 34, p. 612.

Morphine Determinations.

This is a comparison of Procter's-Staple's, Mohr's, Hager's-Jacobson's and Dragendorff's-Mayer's methods for determining morphine. Of the gravimetric methods Staple's gives much the purest and best crystalline morphine, while the greatest exactness is attainable by the volumetric method of Dragendorff and Mayer.

Kosmann, C. 1878.
Bull. Soc. chim. Par. (NS), 30, p. 145; Chem. Centrbl. 1878, p. 693.

The Changing of Morphine into Glucose.

By treating morphine with potassium permanganate, glucose and nitric acid are formed. These two bodies are probably the only ones formed.

Prescott, A. B. 1878.
Proc. Am. Pharm. Assoc. 26, p. 823; Pharm. J. Trans. (3), 10, p. 66; J. Chem. Soc. 38, p. 193.

Valuation of Tincture of Opium.

The opium in twelve different samples of the tincture is determined. Hager's and Staple's methods were used separately on every sample in order to determine the value of the two methods.

The best crystals were obtained by Staple's process; but it is not considered to be preferable to the method of Hager.

Prescott, A. B. 1878.
Proc. Am. Pharm. Assoc. 26, p. 807; Pharm. J. Trans. (3), 10, pp. 128 and 182; J. Chem. Soc. 38, p. 191.

Morphiometric Processes for Opium.

A modified Hager-Jacobsen's method for the assay of opium is given.

A preliminary washing with benzene is for the purpose of removing impurities.

The author also gives a comparison of the different methods generally in use and the reliability of the same.

Petit, A. 1879.
J. de pharm. (4), 29, p. 159*; Chem. Centrbl. 1879, p. 363; Pharm. J. Trans. 9, p. 937.

Estimation of Morphine in Opium.

A method is given for the rapid estimation of morphine in opium, which is sufficiently exact for all common purposes.

A second method is given for use when more exact determinations are required.

Yvon. 1879.
J. de pharm. (4), 29, p. 332*; Chem. Centrbl. 1879, p. 363.

Estimation of Morphine in Opium.

The author gives a review and criticism of the known methods.

Fleury, G. 1879.
J. de pharm. (4), 29, p. 341*; Chem. Centrbl. 1879, p. 363.

Estimation of Morphine in Opium.

The author calls attention to the article by Petit in the J. de pharm. (4), 29, p. 159, and claims that it is only a modification of the method given by him in the year 1867.

Brown, D. 1879.
Med. Times and Gazette, 2, p. 79; Pharm. J. Trans. (3), 9, p. 70; J. Chem. Soc. 36, p. 70.

Action of Iodic Acid, Sulphomolybdic Acid and Ferric Chloride on Morphine and other Substances.

This is mainly an investigation of the color reactions produced by the above reagents on morphine.

Flückiger. 1879.
Pharm. J. Trans. 10, p. 254.

Note on the Estimation of Morphine in Turkey Opium.

The author gives a simple process for the determination of morphine in Turkey opium.

Meyer, A. 1879.
Arch. der Pharm. (3), 13, p. 413; J. Chem. Soc. 36, p. 269; Ber. 12, p. 271.

Absorption Spectra of Solutions of Brucine, Morphine, Strychnine, Veratrine and Santonine in Concentrated Acids.

Drawings of the spectra are given as produced by different strengths of solutions.

The green solution of morphine in hot sulphuric acid, which allows the red to pass through, absorbs the light very strongly by the presence of traces of nitric acid, and allows when diluted more of the yellow and violet rays to pass, while at the same time assuming a beautiful red color.

Smith, Watson. 1879.
J. Chem. Soc. 36, p. 831; Ber. 12, p. 422.

Characteristic Color Reactions Produced by the action of Antimony or Bismuth Trichloride on the Aromatic Hydrocarbons.

With morphine in considerable quantities a faint greenish color is produced by antimony or bismuth trichloride.

Fraude, G. 1879.
Ber. 12, p. 1558; J. Chem. Soc. 38, p. 69.

Perchloric Acid as a Test for Alkaloids.

Perchloric acid of specific gravity 1.13—1.14 has no action on morphine.

Iodic anhydride and sulphuric acid give with morphine a deep violet, then an orange brown color.

Losch, A. 1879.

Pharm. Ztschr. f. Russl. 1879, 18, p. 546*; Chem. Centrbl. 1879, p. 826.

The Quantitative Estimation of the Alkaloids of Plants.

A very complete method for the estimation of the alkaloids in plants with reasons for each step is given.

Bell, J. C. 1880.

Analyst, 1879, p. 181; J. Chem. Soc. 38, p. 68.

Iodic Acid as a Test for Morphine.

Iodic acid is shown to be a very unsatisfactory agent for morphine.

Wright, C. R., and Rennie, E. H. 1880.

J. Chem. Soc. 37, p. 609; Ber. 1880, p. 1996; Chem. Centrbl. 1880, p. 570; Bull. Soc. chim. 1882, (I), p. 237; Pharm. J. Trans. 10, p. 1049.

Influence of Benzoyl Chloride on Morphine.

Benzoyl chloride on morphine produces a di- and not a tribenzoylated base as claimed by K. Polstorff (Ber. 1880, p. 98).

Polstorff, K. 1880.

Ber. 13, p. 86; J. Chem. Soc. 38, p. 408; Chem. Centrbl. 1880, p. 134; Bull. Soc. chim. 1880, (2), p. 708.

Action of Potassium Ferricyanide on Morphine.

A method for the formation of oxydimorphine is given together with a study of its sulphate and hydrochloride.

It is thought that in the formation of oxydimorphine from morphine an atom of hydrogen splits off from each of two molecules of morphine and then union takes place between these morphine residues.

Brockmann, K., and Polstorff, K. 1880.

Ber. 13, p. 88; J. Chem. Soc. 38, p. 408; Chem. Centrbl. 1880, p. 134.

Schutzenberger's Oxymorphine.

Schutzenberger's oxymorphine, to which he gave the formula $C_{17}H_{19}NO_4$, proves on closer investigation by the author to be oxydimorphine $C_{34}H_{36}N_2O_6$.

Brockmann, K., and Polstorff, K. 1880.

Ber. 13, p. 91; J. Chem. Soc. 38, p. 408; Chem. Centrbl. 1880, p. 134.

Potassium Permanganate on Morphine.

Flückiger states that oxymorphine is formed by the action of potassium permanganate on morphine. The authors find that oxydimorphine is what is formed in this reaction.

Brockmann, K., and Polstorff, K. 1880.

Ber. 13, p. 92; J. Chem. Soc. 38, p. 408; Chem. Centrbl. 1880, p. 134.

Oxydimorphine.

Oxydimorphine is obtained when an ammoniacal solution of morphine is exposed to the air.

Polstorff, K. 1880.

Ber. 13, p. 93; J. Chem. Soc. 38, p. 408; Chem. Centrbl. 1880, p. 134; Bull. Soc. chim. 1880, (2), p. 710.

Action of Potassium Ferricyanide on Methylmorphine Iodide.

The author has prepared the following morphine compounds:

Basic iodide of methyloxydimorphine, $(C_{17}H_{18}NO_3)_2CH_3I.CH_3OH$.

Basic methyloxydimorphine hydroxide, $(C_{17}H_{18}NO_3CH_3)_2OHI+5H_2O$.

Neutral sulphate, $(C_{17}H_{18}NO_3CH_3O)_2SO_2+4H_2O$.

Methyloxydimorphine hydroxide, $(C_{17}H_{18}NO_3CH_3OH)_2+7H_2O$.

(To be continued.)

MONTHLY REVIEW.

Chemistry.

Ethylamine.

In his studies concerning the combinations of uric acid with organic bases, C. Goldschmidt concluded to divide these compounds into two groups with respect to their water solubility. To the first group, whose members are only soluble in hot water, belong the compounds of uric acid with methylamine, benzylamine, nicotine, tetrahydroisoquinoline, etc. The urates of the second group are fairly soluble in cold water; they include the uric acid compounds of piperidine, ethylamine and propylamine. The solubility of piperidine urate is 5.3 p. in 100 p. water at 17° C.; that of the other two members of this group is about the same. For practical reasons ethylamine has been chosen as a remedy in the treatment of gout and bladder-stones.

[Chem. Ztg., 1897, p. 544; Pharm. Centralh., 1897, p. 465.]

The Comparative Value of Antiseptics.

A. Gawalowski has brought together in tabulated form a statement of the comparative value of a number of disinfectants, ranking them according to their efficiency as disinfectants, antiseptics and deodorizers. In this table, corrosive sublimate is taken as a standard for comparison with a value of 100.

Substance.	Disinfectant.	Antiseptic.	Deodorizer.
½ % Corrosive sublimate sol.	100	100	—
Carbolic acid (100%)	50	50	40
Sulphurous acid (gas)	50	50	50
Thymol (solid)	50	50	40
Creosote (100%)	50	50	40
Antimony (Bayer)	50	50	40
Iron vitriol (cryst.)	40	50	30
Ferrous zinc sulphate (cryst.)	40	50	40
Iron oxide	40	10	15
Ferrous zinc magnesium sulphate (cryst.)	40	30	30
Copper zinc sulphate (cryst.)	35	40	40
Ferrous zinc cupric sulphate (cryst.)	35	35	40
Zinc phenolate (dry)	30	40	45
Sulphites (10—40%)	15–25	15–25	15–25
Permanganate (solid)	25	10	50
Salicylates (solid)	25	25	25
Creolin	25	25	40
Lysol	25	25	40
Chlorine (gas)	15	—	50
Ferrous zinc calcium sulphate (cryst.)	15	30	40
Ferric salts (40–50% solutions)	10	10	5
Zinc salts (cryst.)	10	—	40
Calcium chloride	5	—	15

[Pharm. Post, 1897, p. 363.]

Homeophatic Dilutions in the Light of Physical Chemistry.

Prof. Ostwald of Leipzig, has recently published an article on the "Formation and Transformation of Solid Bodies." His results are of pharmaceutical interest in so far as he used homeophatic triturations and determined

their activity in a physical chemical manner. Prof. Ostwald's results are very briefly given in the following.

A soluble solid body possesses the property of changing from a solid to a liquid state when brought in contact with a solvent, and after evaporation of a solvent to return to its original state. In the case of salts their return to the solid state is called recrystallization. When a solvent has taken into solution as much of the solid body as it can hold at a given temperature, the solution is said to be saturated for that temperature; but when the solvent has taken up a larger quantity, the solution is said to be supersaturated. The longer or shorter time during which this supersaturation is capable of existing is called overcooling. This overcooled condition can, as is well known, exist for a long time when the solution is carefully protected. The solution solidifies, however, to a mass of crystals when the smallest particle of a crystal of the dissolved substance is brought into contact with the solution. This crystal particle may be so small that it is not visible with the naked eye, and can scarcely be recognized with the microscope. Prof. Ostwald has experimented with these supersaturated and overcooled solutions in order to determine the amount of crystal substance necessary to produce crystallization. In order to obtain very minute crystalline particles he triturated the crystals with powdered quartz. For farther trituration he used absolutely pure milk sugar. The quantitative relation existing between the triturated substance and the indifferent vehicle was as follows.

1.	Trituration, in	1	gram	1/10	gram.
2.	"	" 1	"	1/10 0	"
3.	"	" 1	"	1/10 00	"
4.	"	" 1	"	1/10 000	"
5.	"	" 1	"	1/10 000 0	"
6.	"	" 1	"	1/10 000 00	"
7.	"	" 1	"	1/10 000 000	"
8.	"	" 1	"	1/10 000 000 0	"
9.	"	" 1	"	1/10 000 000 00	"
10.	"	" 1	"	1/10 000 000 000	"

At first Prof. Ostwald put himself to the laborous task of making these triturations himself, but later he used the trituration machine of the homeopathic Centralapotheke in Leipzig. The perfectly uniform results obtained in the experiment described above were as follows: crystallization was induced when no higher than the 9th trituration was used. Several substances, like salol, would work with this trituration only when freshly prepared. When older, the 3rd trituration would still induce crystallization, but not the 4th. Only a single exception to this general law was found in the case of borax which induced crystallization as far as the 17th trituration. This result seemed so surprising to Prof. Ostwald that he made another series of triturations, using the greatest possible care. These new triturations gave the following result: the 9th trituration of borax is still active, the higher triturations are not, thus agreeing with the results obtained with the other substances.

Homeopathy, as is well known, goes far beyond the 9th trituration, as it puts physiological experiments on a higher plane than the chemical. Prof. Ostwald's experiments are, however, in favor of the activity of minute medicinal doses. For when the one thousandmillionth part of a gram is sufficient to produce such visible results as the solidification of a solution by the formation of crystals, we can hardly say that the 9th trituration contains no more of the active substance.

[Ztschr. f. Phys. Chemie 22, p. 289.]

Botany and Pharmacognosy.

A Useful Cactus.

Dr. Ochsenius says that in Chili, *Opuntia vulgaris*, *Juna* of the country, furnishes in its sticky juice the cement used in preparing a lime wash for the houses of Middle Chili. The authorities require this wash to be applied shortly before the day of the national celebration. [Natur, 1897. p. 227.]

A Neglected Source of Mucilage.

The okra, *Hibiscus æsculentus*, which grows luxuriently throughout the South, is very rich in mucilage. All parts abound in this principle and in view of the superior qualities of the constituent in this plant, it seems strange that it has not found a wider use. Except in the domestic practice of the negroes and creoles of the Gulf states, it seems to have found no place. When deprived of its cortex, the root furnishes a powder as white as snow, extraordinarily rich in mucilage, tasteless and far superior in every respect to marsh mallow. During the war, okra seed, parched and used either alone or in conjunction with dried and parched sweet potato, were used as a substitute for coffee. Sometimes the dried leaves of *Ilex cassine*, yaupon, were added to supply the stimulating effect of the caffeine contained in them. The plant itself, root and stalk, was used as soothing poultices for inflamed wounds.

[The National Druggist, 1897, p. 234.]

Saltpeter in Indian Millet.

Andropogon sorghum, known as Indian millet or durra, is a wellknown member of the Grass family growing either wild or cultivated in different parts of the world. It is an important plant since from its grain bread is made, from its floral panicles rice brooms are manufactured and its leaves furnish a green fodder for cattle.

In connection with this latter use it has long been known in India that continued dryness develops in the plant poisonous properties sufficiently marked to render it fatal to stock. The natives believe that a small insect which attacks the plant lends to it its toxicity. The English botanist, Anderson, denies the presence of a poisonous principle and regards its harmful action as a result of the operation of mechanical causes. In 1877, an unusually great mortality among the stock was observed. Recently Pease has taken up the investigation of the subject with very interesting results. He found in dry, depauperate *Andropogon* plants in the interior of the culm especially at the nodes considerable deposits of potassium nitrate. The plants were found to contain from 15 to 20 pounds of saltpeter. In order to test the action of saltpeter on animals, Pease gave a heifer 300 grams of the salt. Inside of twenty minutes, death occurred with symptoms like those seen to follow the use of the fodder in question. Pease believes the unusually large quantities of saltpeter occuring under certain conditions in this

plant give to it this toxic action. Following the setting in of the rains and the resumption of growth, *Andropogon* is said to lose its poisonous properties. A strong assimilation of this salt must therefore occur.

[Natur, 1897. p. 227.]

Insect Powders of Commerce.

George R. Durrant has given the subject of insect powders a careful study and summarizes his results in the following terms.

The value of insect powder is in direct proportion to the combined amount of essential oil and soft acid resin, and in inverse proportion to the amount of chlorophyll, both statements to be read together.

A perfect sample of insect powder should pass a sieve having at least eighty meshes to the linear inch. The powder should yield 5.25 percent of combined essential oil and soft resin; chorophyll should be absent, or present in the merest trace.

The following method of testing the value of insect powders is described. Place 100 grains of the powder in the cylinder of a glass syringe (1 ounce). Powder should be pressed down compactly into a piece of absorbent cotton, to act as a filter. Moisten with ether, 7.35. Close top of syringe and macerate for 30 minutes. Percolation may then proceed, the powder being repercolated with the same fluid four times and finally washed through with sufficient ether to make up one fluid ounce. The resulting percolate should have a rich yellow color; if a pronounced green color be the result, the sample may be at once discarded. In absence of much green coloring matter, evaporate fluid carefully (temperature not exceeding 200° F,) and residue weighed in a tared watch glass. The resulting soft mass should not weigh less than 3.75 grains, and in finest samples reaches 5.6 grains, and should have the pleasant, characteristic odor of the flowers.

[Bull. of Pharm. 1897, p. 347; from Pharm. Journ.

Source of Kinkeliba Leaves.

Kinkeliba leaves used as a remedy for bilious fever of the tropics are derived from *Combretum altum* Guill. and Perr. A French missionary named Rambault, found these leaves much in use among the natives. The leaves are boiled in water and the dark red liquid drunk when the patient is suffering from a kind of bilious fever accompanied by congestion of the liver and vomiuing, and yellowness of the eyes. It is used likewise in hard attacks of the colic and also to restrain vomiting when not attending bilious fever. From the pulverized fruits and oil a salve is prepared which they apply to pus-discharging boils due in part to venereal and in part to other diseases. P. Rambault has observed that the dried leaves retain their efficiency for several years. His directions for preparation state that 4 grm. of leaves are used in 250 grm. of water, or 16 grm. per liter; the leaves allowed to boil fifteen minutes. The liquid must be bitter and brownish but not dark brown. In bilious fever 250 grm. of the decoction are drunk as soon as possible, ten minutes later 125 grm., again after ten minutes 125 grm. During this disease at least one and one-half liters of this liquid must be taken each day for four days. During the first three days, the patient should partake of no food, and on the fourth very sparingly. Further details regarding treatment are given in the original.

An analysis of these leaves by Max Schlagdenhauffer gives as chief constituents tannin (20.8 in 100 grm.) and saltpeter.

The name *Kinkeliba* is taken from the Ioso language which prevails in West Africa from Rio Nunez to Sierra Leone. The plant is a shrub growing readily near streams, never in saline regions. The trunk attains a diameter of about one decimeter, has very hard white wood and when grown is conspicuous by reason of its white bark.

[Notizblatt d. königl. bot. Gart. u. Mus. zu Berlin, No. 4. p. 151. 1896.]

The Horseradish Tree.

N. S. Rudolf writes concerning this tree, *Moringa pterygosperma*. It is native in the British East Indies, occurring as a fine forest tree on the lower slopes of the Himalayas and other mountains. This tree is one of the most beautiful of the Indian jungles. The gracefully drooping branches are covered with small leaves about an inch in length, resembling sage leaves in their external characters. The fruit consists of capsules twelve to eighteen inches in length, having a triangular section, and when ripe, a brownish-yellow color. The small, light-yellow flowers are in clusters.

All parts of the tree are used for culinary purposes and can be found in most bazars. In many parts of India, the fresh tender shoots are used as a substitute for horseradish. The flowers are fried in butter and eaten with milk by some natives.

Although of great importance in ancient Hindoo medicine, the tree is not much employed in modern medicine. The native doctors and herbalists ascribe to the various parts certain properties. The freshly expressed juice of the leaves is given as an emetic; the green leaves boiled in water and applied as a poultice are said to be useful in reducing swellings in broken limbs. The flowers are powdered with *ghee*, clarified butter, in a mortar and administered as a powerful liver tonic, increasing the flow of bile; they are regarded as a valuable remedy in treating jaundice and sluggish liver and are reported to be an efficient aphrodisiac. The root has a pungent, burning taste. When finely scraped and applied as a poultice, it is vesicant in its action. The diluted juice expressed from the fresh root when administered internally acts as a diuretic, prevents gravel and aids digestion. The fruit is used in the preparation of curry and is recommended as an article of diet in certain liver troubles. The tree exudes a quantity of clear, yellow gum from the trunk in the hot season. This swells greatly on moistening and is used as a tent in dilating the os uteri. The seeds yield a clear, light colored, fixed oil, which lacks special therapeutic properties, but is largely used in extraction of perfume from flowers.

[Bull. of Pharm. 1897, p. 343.]

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Reviews.

Die Arzneimittel der organischen Chemie. Für Aerzte, Apotheker und Chemiker bearbeitet von Dr. Hermann Thoms, Privatdozent* an der Universität Berlin. Zweite, vermehrte Auflage. Verlag von Julius Springer, Berlin. Ein Bd., pp. VI, 157. 1897. M. 6.00.

If we reflect what has been accomplished scientifically by way of discovery of new remedies since the appearance of the first edition of this work in 1893 the result, in spite of the numerically large increase in new remedies, is on the whole modest. The investigative thought has principally pursued old channels. The desire to secure new substitutes for iodoform by the introduction of iodine into various molecular groups is a good illustration of this fact. Phenetidine, which has been found to be therapeutically a very valuable substance, has been made the basis of numerous new compounds, mostly antipyretics and antineuralgics like the basal compound.

Whereas on the one hand it may be a matter of regret that our materia medica is growing altogether out of proportion with the needs of therapy, on the other hand it is probably well that these channels of investigation be thoroughly explored. The fittest will no doubt survive ultimately and, what will be of greater importance, the relation between physiological action and chemical constitution may some day permit of valuable generalizations on account of the detailed knowledge obtained.

Numerous attempts to prepare artificial substitutes for cocaïne have been made. A successful attempt is that of Mehrling resulting in the preparation of eucaïne. Not only does the synthesis of known alkaloids or of substances which have like or similar therapeutic properties but are by no means identical, still constitute a well-worked field of scientific investigation, but a new tendency, viz. to change natural vegetable alkaloids by oxydation, by the introduction of new radicles etc., has assumed greater importance in the more recent chapters of new remedies.

Under this captious name old remedies have been introduced largely in a modern and on the whole more scientific garb. What role organotherapy is destined to play in materia medica may not yet be ascertainable with certainty. May not these recently introduced organo-preparations soon be replaced by the isolated form of their therapeutically valuable constituents, is a question that suggests itself rather emphatically since Baumann's discovery of iodothyrin.

Such and other similar considerations, for they might be spun out almost indefinitely, certainly indicate the necessity of constantly being wide awake on the part of both physician and pharmacist. Both pharmaceutical and medical journals are compelled to give no small amount

* Recently appointed Professor.

of space to the evolution and to what at times seems like revolutions of modern materia medica. Although the busy practitioner in both professions secures the latest information in this manner, he is greatly in need of a compendium to which he can refer more readily than to the files of his journals.

Although several smaller guides through the conglomerate known as new remedies exist, there is possibly not one which is as complete and serviceable as the one before us. Though not absolutely complete, it possibly contains a larger number of primes than any similar compilation. The primes are duly emphasized by heavy type and include the synonyms, an arrangement that makes the work all the more valuable for ready reference. Besides name, synonymy and formula contained in the first column, the second contains information with regard to preparation. The third column contains an enumeration of the more practically valuable physical and chemical properties, and the fourth column contains a brief account of its therapeutic application including dose. The information contained in the last column has been submitted to a medical authority. The following illustration will at a glance show the arrangement of the text.

Acidum dijodo salicylicum. Dijod Salicylsäure. $C_6H_2I_2(OH).COOH$.	Bildet sich bei der Einwirkung von Iod und Iodsäure auf Salicylsäure in alkoholischer Lösung.	Weisses, kleinkrystallinisches, zwischen 220° und 230° unter Zersetzung schmelzendes Pulver von süsslichem, nicht ätzendem Geschmack. Löst sich in 1500 Theilen kalten, 660 Theilen heissen Wassers, leicht löslich in Alkohol und Aether. *Vorsichtig aufzubewahren!*	Als Analgeticum, Antithermicum und Antipyreticum angewendet, wie Salicylsäure. Dosis 1—3 g. pro die.

The new edition will be very welcome to those who possessed the first, which was reviewed in these columns in 1894 (p. 75). At that time a more detailed exposition of the contents of the work was given. Those who have not known the first edition and who read German will do well to make its acqaintance. The price is exceedingly reasonable and the book work is excellent. *E. K.*

Praxis der Harnanalyse. Anleitung zur chemischen Untersuchung des Harns nebst einem Anhang Analyse des Mageninhalts von Dr. Lassar-Cohn, Universitätsprofessor zu Königsberg i. Pr. Verlag von Leopold Voss, Hamburg und Leipzig. Brochure, pp. 38. 1897. M. 1.00.

Many pharmacists and physicians who have a fair chemical knowledge shrink from making some of the simple tests for constituents of normal or pathologic urine. This condition may be brought about by a lack of practice accompanied by a want of confidence or through a slight acquaintance with some of the larger works on the subject with their bewildering profusion of tests causing a test for albumen to assume the appearance of a scientific investigation. Yet any one with a fair knowledge of chemistry and of chemical analysis should be able with the aid of a guide to perform all of the tests commonly demanded for a proper diagnosis based on the constituents of urine.

The object of this little treatise is to encourage physicians, apothecaries and chemists to perform these tests without hesitancy. The price of the booklet is so cheap that every pharmacist who has the requisite chemical knowledge should secure a copy and begin to practice at once, thus preparing himself for professional work along this line. The author presupposes a knowledge of chemical technique and therefore does not go into minute descriptions of details of manipulation, neither does he produce cuts of any utensils to be used as some of our American manuals do. This readily explains why he succeeds in crowding so much necessary information into so small a treatise.

Frequently it is difficult to obtain pathologic urine with which to perform the various tests for the sake of practice. This difficulty is overcome by the preparation of artificially pathologic specimens for the various tests. The substances for which tests are described are albumen, sugar, acetone, aceto-acetic acid, coloring matters from gall and blood, urobilin, indican, sulphuric acid, simple and paired, chlorine, phosphates, ammonia. The quantitative estimation of several of these is also outlined. Lists of the necessary reagents and apparatus are appended. Persons who have not had a course of urinary analysis at college, will find this treatise very serviceable. *E. K.*

Neues pharmaceutisches Manual von Eugen Dieterich. Siebente, vermehrte Auflage. Verlag von Julius Springer, Berlin. Ein Bd., pp. VI, 842, mit in den Text gedruckten Holzschnitten. 1897.

One of the most unsatisfactory demands which, on the whole, can be made upon the pharmaceutical reviewer is the request to comment on a pharmaceutical formulary. The factor of greatest importance in the compilation of such a work is accuracy of details, moreover of details which cannot be passed upon by theoretic speculation, but by actual experiment only. A satisfactory review of a new formulary is therefore a practical impossibility if anything more than a mere statement of contents is wanted.

Although the volume before us bears the attribute "new" in connection with its title, it is by no means new. Neither is it old in the sense of antiquated but rather in the sense of tried. The fact that seven editions have thus far become a necessity is a comment in itself more favorable than much praise. The work has not only been tried and found satisfactory, the crucial test in case of a formulary, but it has also grown, apparently with every new edition. Whereas the first edition contained but 344 pages, the fifth contained 717 pages or more than again as many. This edition published in 1892 was reviewed at length in the columns of this journal (vol. 10, p. 249). The sixth edition, published in 1894 (reviewed vol. 12, p. 223), contained 740 pages. In 1896 a supplement of 70 pages to this edition

was published (reviewed vol. 14, p. 71). The last or seventh edition now before us contains 842 pages, as already stated above. If to these data is added the statement that the first five editions appeared in as many years, it would seem that nothing more need be said, for a work that has had such a remarkable history needs no further introduction to those who thus far have not made its acqaintance. To those who possess one or the other of the older editions it evidently speaks for itself.

The original formulary in the course of the rapidly succeeding editions has gradually grown into what might be termed a commentary of formulary preparations. Detailed directions for pharmaceutical technique and what one in this country terms operative or practical pharmacy are included in numerous chapters on the whole richly illustrated. Whereas a good formula will remain unchanged and a formulary of tried formulas will therefore undergo modifications only in so far as new additions are concerned, the technique is constantly being improved. Here, therefore, the greatest changes may be expected and naturally are to be found, both in the way of improvements and additions. The index of forty-one triple column pages contains over eight thousand items, apparently complete and therefore very valuable.

The Neues pharmaceutisches Manual was primarily intended for the Germans whether living in Germany, Austria, America or elsewhere. Inasmuch as the strictly formulary part requires but little knowledge of the German language to be readily comprehensible, it is natural that such a work should find favor among others than those who master the German. In order to facilitate the use of this work with such persons, the author in the supplement ventured on a then new departure in publishing a list of substances mentioned and technical expressions used in the earlier editions of the work, together with their Latin, French and English translations. This glossary had to be criticized unfavorable at the time (see Review, vol. 14, p. 71), both for lack of proper discretion in the choice of the words and for exceedingly poor translations. Evidently the author did not take cognizance of this criticism, for some of the English translations are too absurd to appear uncorrected in a new edition as they all do. It is to be hoped that the author will have these lists revised by competent persons who can translate without a dictionary or if using a dictionary know which translation of several is wanted in a given case.

Fortunately these imperfections do not affect the formulary which constitutes the bulk of the work. Those who read German may never have occasion to consult the glossary and those who are compelled to do so occasionally will readily see the mistakes and not be tripped by them, for they are too apparent to those conversant with the language in question. The book work is of the usual excellence. On the whole the work has recommended itself to such an extent that any further recommendation to the pharmaceutical practitioner and manufacturer appears uncalled for. *E. K.*

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EDITORIAL.

Although the Review has fearlessly exposed shams as well as more positive evils, it has wherever possible excluded the personal element. On the one hand, little good is accomplished by personal attacks; on the other, little improvement is possible if all remain silent in the face of sham and wrong. The more we can leave our own little self out of consideration in eulogy as well as in condemnatory criticism, the better for the cause which we represent. For this reason it is also well to avoid discussions to and fro in the columns of journals. It is on the whole a cheap form of advertisement. If a subject is fairly well presented in one journal and the views are opposed in another journal, the writer, as a rule, may contently leave the whole matter to the readers of both journals. If the readers are intelligent and desirous of knowing the truth, they will have learned to discriminate.

This has been the policy of the Review, which, as a rule, it has observed. It does not intend to deviate from this policy at present, but simply state it by way of explanation of its attitude in a matter which, no doubt, has attracted the attention of some of the readers of the Review who also read the American Journal of Pharmacy. In the November number of the latter journal Professor Remington states that "a German editor in America" "found fault" with the Brussels Congress, because "from the beginning to the end not a German word was heard in the deliberations of the Congress."

The Review merely desires to call attention to the fact that it would have been rather poor taste for any German editor, whether in America or Germany, to find fault with the deliberations of the Brussels Congress for such reasons. Those persons who desire to know what the American editor of the Review did write about the Brussels Congress, can easily find out by consulting the October number of this journal.

The writer does not construe Professor Remington's criticism as a personal attack upon the editor of the Review, neither does the writer want to cast any reflections, in this matter, upon his Philadelphia colleague. The differences are evidently caused by misunderstanding. To call attention to this is all that is necessary. Differences of opinion will always exist and there is no reason why we should all agree both in religion and politics before we consent to join hands in the elevation of our profession. Even if Professor Remington and the editor of the Review are, as is but natural, influenced by their personal characteristics as to the manner in which they look at the same event, this is no reason why personalities should be indulged in on either side. As to the general views presented by Professor Remington in his article referred to above, these the writer prefers not to touch upon at present for the reasons already stated.

In its report of the Minnetonka Meeting of the American Pharmaceutical Association the Review (p. 170) called attention to the lack of proper discussion of reports and papers. There is little sense in having papers printed in advance in order to have them read at the meeting by the author,

and finally to have them reprinted and buried in the Proceedings. The same papers and reprints can be read with much more comfort at home. What we sadly lack at these meetings is a liberal allottment of time for discussions.

The editor of the American Journal of Pharmacy has also raised his voice in behalf of better discussions. The value of such discussion, however meagre, is shown by a short paragraph in the Twelfth annual report of the Massachusetts Board of Registration in Pharmacy (p. 6.) In reply to one of the queries of the Section on Education and Legislation, Mr. Whitney read a paper occupying little more than a page in print. Aside from the direct reply to the query, this paper brought out the fact that a candidate had come up for examination before the Board as often as eighteen times. His first examination was in March, 1888, and "he passed" in June, 1897. Attention was called to the pedagogic crime which must tend to defeat the very purposes of the law in so far as the examination is supposed so be a test of fitness. The Board now requests that section 5 of the law, which says: "Any person may be reexamined at any regular meeting of the Board, upon the payment of a fee of three dollars," be amended. If a single remark may lead to the correction of such an abuse, what may we not expect from more liberal discussions wisely directed.

During the year from Oct. 1, 1896 to Oct. 1 of this year the Massachusetts Board has examined 540 candidates at fourteen examinations, each covering a period of two days. Of this large number 79 were registered and not less than 461 refused. These figures apparently do not speak well for the commonwealth that prides itself on having the oldest institution for higher education in the country. The fact is that Harvard has never had a place for pharmacy in its educational curriculum.

If these figures cry loud, others cry louder. Of the 79 successful candidates 14 passed on a first examination, 19 on a second, 7 on a third, 17 on a fourth, 7 on a fifth, 5 on a sixth, 2 each on a seventh, eighth, tenth and eleventh examination respectively, and one each on a twelfth and an eighteenth.

As if it were necessary to apologize for undue severity, the Board publishes a number of answers, a few of which may be quoted to show that even six and eight years of "practical experience" will not necessarily make competent druggists.

"Thorn apple is nut galls."

"Cod liver oil comes from the whale and sweet oil from the hog."

"Hirudo means a large pill or suppository."

"Aloes are obtained by cutting down the trees and pruning them."

"Aloes are the inside fruit of a nut."

An applicant who had been refused six times says on his seventh examination: "Ejusdem means, let him take"; correcting himself he said: "It means a rectal injection."

An applicant claiming eight years' experience, age twenty-one, says: "A tablespoonful of landanum contains half a grain of opium..... Opium is obtained by insects pinching the buds of opium trees."

The Massachusetts Board has done excellent work in weeding out the dram shops, those saloons of would-be respectable people and we should be glad to see it set an example to other states in the near future as to the proper way of conducting examinations. But as long as there is one drug store to every fifteen hundred inhabitants, there is reason to fear that the better educated young men of the Bay State will prefer to enter other callings than that of pharmacy.

The Proceedings of the nineteenth annual meeting of the Missouri Pharmaceutical Association contain an unusual amount of food for reflection. This state association has been more or less prominent among its sister associations, especially in the central west. Some of its friends claim for it the honor of having introduced progressive methods of conducting annual meetings. It is, therefore, with special interest that pharmacists from other states watch the tendencies developed in the Bourbon state by the "Missouri idea," if a quotation from the National Druggist be permitted.

Missouri pharmacists have claimed and many pharmacists from other states, who have fallen in line with the advocates of the "Missouri idea," have claimed again and again that the sports indulged in so largely by many state associations at their annual meetings, bring out more members; that the scientific workers of an association get a larger audience on account of this bait and are therefore greatly stimulated in their investigations.

Those who were so dull as not to be able to understand this kind of logic will, no doubt, become even more so, if they read the "emphatic" plea of the late President of the Missouri Association. Some of his words are worth quoting. He says: "We boast of the largest association in this country, and while our attendance is always large, the attendance at the business meetings in the past two or three years has been very slim and discouraging to the officers of the association. You discourage the very things for which pharmaceutical associations are formed—for the advancement of pharmacy and for our mutual improvement and benefit." Later he indicates where the trouble lies: "I would not for one moment disparage any of the outdoor sports. There is time for all—all we ask of you is about four hours during the day, two in the morning and two in the afternoon, and I beg of you all to come out and be here on time.".

These words embody a sad confession coming from the president of the association that boasts of being the parent of the new idea that almost captured the "last stronghold," the American Pharmaceutical Association, this summer.

Two years ago when the writer, having the Sheboygan meeting of the Wisconsin Pharmaceutical Association particularly in mind, characterized some of the doings of the state associations, he was severely criticized by a number of St. Louis pharmacists. The shoe evidently fitted the Missouri Association as well as the Wisconsin Association. The writer should be greatly pleased to have some of the Missouri friends witness the "outdoor sports" such as were conducted at Green Bay last summer. The tune "There 'll be a hot time in the old town to-night" was never more appropriately played unceasingly for several hours than on a memorable August night in this historic town. Such a spectacle the city evidently had never before witnessed. If some of the zealous Jesuit fathers could have risen from their graves, they might have been tempted to give up their missionary work among the red men and to take up "home" missionary work.

What benefit are we deriving from this "Triumph of the Missouri Idea"? In the very home of this "Idea" we find that its tendencies are "emphatically" criticized. That the President's views are shared by others is shown by the report of the Committee on the President's Address: "We are sorry to be obliged to agree with the President in his criticism of the lack of interest in business and scientific meetings." According to the Secretary's report, the Proceedings of the two previous years could not be printed until a month previous to this year's meeting, because not sufficient money was on hand to pay the printer's bill. According to a St. Louis professor, Wisconsin has "outdone Missouri." Be it remembered in this connection that Wisconsin was represented at the Minnetonka meeting of the American Pharmaceutical Association by two members and that a third was admitted to membership after he had left.

But the fame of the "Missouri Idea" has been carried farther. A Canadian member of the American Association expressed his undisguised disgust at the way in which the Wisconsin Association and others conduct their annual meetings. The Chemist and Druggist of London contained in a comparatively recent number a sketch of our state association meetings that certainly roused much mirth on the part of our British cousins. According to the Pharmaceutical Journal, another London weekly, Professor Remington entertained his British hosts at the Smoking Concert at Glasgow by giving "a brief and humorous account of a pharmaceutical meeting at which he was present in the wild and woolly west." The reporter then states that, "like most of his countrymen, Professor Remington is a humorist, and his well-told account of the gathering and the amusing incidents that occurred kept the audience in a constant state of laughter. His account of the man who won the old man's race by sticking out his goatee or beard just at the finish was immense, as was the judge's decision of 'won by a hair'."

The reputation that we are gaining at home and abroad certainly cannot be considered enviable. If the pharmacists in America are in danger of being blinded by the eulogies of pretending friends, their eyes certainly ought to be opened by accounts such as the above. The true friend will not shirk from stating the naked truth if need be, even if it is as unpleasant to say it as it is to listen to it.

The writer is by no means fond of midnight scientific sessions. One of the greatest benefits to be derived from the meetings of associations of any kind is the personal intercourse between men of like calling. The social features are, therefore, gaining ground in all scientific associations. But there are no scientific associations, either on this side of the Atlantic or on the other, that conduct themselves in the manner of many of our state pharmaceutical associations. The "outdoor sports" bring out the "boys," but the men largely stay at home.

In this connection it may be of interest to note what efforts are necessary to bring out 160 druggists and ladies. The Secretary's report gives us an insight. He reports:

"An unusual effort has been made to keep the meeting prominent in the minds of the members. About six weeks ago the Secretary sent a notice of the meeting for publication in each pharmaceutical journal. The Local Secretary, Mr. Thomas Layton of St. Louis, mailed a postal card to each member of the Association about ten days later. This was followed in a week by the official circular of the Permanent Secretary. The Meramec Highlands Company next addressed the members. Then came a neat announcement of the meeting from the Crescent Paint and Color Company of St. Louis. Mr. Geo. E. Hopkins, Chairman of the Transportation Committee, sent a circular of information to the members, and on Saturday last the Meyer Brothers Drug Company mailed them a special letter. Perhaps other firms have taken similar action."

Seven invitations to bring together a small fraction of the druggists of a state, or of the metropolis of a state, at a summer resort a few miles from the metropolis. It would appear that Uncle Sam had the best of the bargain. Incidentally it may be of interest to note that the Pharmaceutical Travelers' Association of the same state, which met at the same place and at the same time, registered an attendance of eighty, half as many as the druggists including wives and daughters.

ORIGINAL CONTRIBUTIONS.

Medicinal Plants of Brazil.*

By *Dr. Theodor Peckolt of Rio de Janeiro.*

Nectandra amara Meissn. Diese Art kommt vor vom Staate Pernambuco südlich und westlich bis zum Staate S. Paulo. Hier im Staate Rio de Janeiro befindet sich dieselbe vorzugsweise auf dem Orgelgebirge und dessen Ausläufern. In diesem Staate und S. Paulo heisst dieselbe *Canella preta* —schwarzer Zimmt: in Minas: *Paó de Santa Anna;* in den anderen Staaten: *Louro preto* — schwarzer Lorbeer, *Louro amargoso* — bitterer Lorbeer; der Tupiname ist *Lurinée.*

Ein schöner, 10 bis 14 Meter hoher Baum mit weit ausgebreiteter Krone. Die jungen Zweige und Knospen sind braungelb befilzt. Die Blätter sind lancettlich, etwas zugespitzt, an der Basis verschmälert, die Ränder zurückgerollt. Der Blüthenstand besteht aus achsel- und endständigen, doldenförmigen Rispen mit weissen, wohlriechenden Blüthen. Die Beere ist oval, von der Grösse einer kleinen Olive, bis zu ⅔ vom Becher umschlossen. Das Holz ist schwarzbräunlich, an der Luft dunkler werdend und als Möbelholz noch mehr geschätzt und höher bezahlt als das Holz von *Nectandra mollis.*

Die Rinde ist nicht allein ein vielfach benutztes Volksheilmittel, sondern auch als *Nectandra amara* officinell und von den Aerzten häufig verschrieben. Ich kann die Wirksamkeit bestätigen. Dieselbe verdient auch in anderen amerikanischen und europäischen Ländern therapeutisch benutzt zu werden.

Die Rinde der im Staate S. Paulo wachsenden Varietät *australis* wird vorzugsweise benutzt. Diese wurde auch untersucht. Dieselbe wird von den Sammlern in 5 bis 8 cm. breiten Streifen vom Stamme und den dicken Aesten abgelöst, dann in Stücke von verschiedener Länge geschnitten. Getrocknet bilden diese dann ziemlich flache, 4 bis 5 mm. dicke Stücke, welche aussen graubraun, warzig höckerig, stellenweise mit einer weissen Flechte bekleidet sind. Im Durchschnitt sind sie röthlichbraun. Die Innenfläche ist matt röthlich-braun. Sie sind schwer spaltbar, im Querbruch sehr faserig. Gestossen liefern sie ein hell röthlichbraunes Pulver. Die frische Rinde hat einen schwachen, doch angenehm aromatischen, etwas Pichurim ähnlichen Geruch. Gekaut ist sie von styptisch, bitterem Geschmack. Bei der getrockneten Rinde ist der Geruch schwächer und der bittere Geschmack kaum bemerkbar styptisch.

Im Staate S. Paulo ist die gepulverte Rinde unter der Benennung *Pos de Santa Anna* ein Specificum bei chronischer Diarrhoe und atonischer Dyspepsie. Dreimal täglich wird ein halber Theelöffel voll mit Wasser genommen. Die Aerzte verordnen, ausser bei den genannten Affectionen, noch bei intestinal Catarrh, Enteritis, Cantarrhalis, Disenterie, Lienterie.

Von der Tinctur (1:5 Alcohol) wird Kindern 2 bis 4 Tropfen, Erwachsenen 2 bis 5 Grm. dreistündlich verabreicht. Das Decoct, 30 Grm. zu 300

Nectandra amara Meissn. This species occurs from the state Pernambuco southward and westward to the state S. Paulo. Here in the state Rio de Janeiro it is found especially in the Organ Mts. and in the outlying ranges. In this state and S. Paulo it is called *Canella preta* — black cinnamon; in Minas: *Paó de Santa Anna;* in the other states: *Louro preto* — black laurel, *Louro amargoso* — bitter laurel; the Tupi name is *Lurinée.*

A fine tree from 10 to 14 meters high with a widely spreading crown of branches. The young branches and buds are brownish-yellow, pubescent. The leaves are lanceolate, somewhat acuminate, narrowed at the base, the margin reflexed. The inflorescence consists of axillary and terminal, umbellate panicles of white, fragrant flowers. The berry is oval, in size equal to a small olive, two-thirds enclosed by the cupule. The wood is brownish-black, turning darker on exposure to the air. For furniture this wood is more highly prized and commands a higher price than that of *Nectandra mollis.*

The bark is not only a much-used popular remedy, but also, like *Nectandra amara*, is official and is frequently prescribed by physicians. I can affirm the activity ascribed to this. It deserves to be used therapeutically in other American and European countries.

The bark of the variety *australis* found in the state S. Paulo is used chiefly. This was also investigated. It is peeled from the stems and large branches by collectors in strips 5 to 8 cm. wide, which are then cut into various lengths. When dried, these form rather flat pieces, 5 mm. thick, which externally are grayish-brown, with warty projections, clothed in places with a white lichen. In cross sections they are reddish-brown. The inner surface is dull reddish-brown. They are split with difficulty, fracture very fibrous. When ground, they yield a light, reddish-brown powder. The fresh bark has a faint, but pleasant, aromatic odor, somewhat like pichurim. When chewed it has a styptic, bitter odor. In the powdered bark, the odor is fainter and the bitter taste hardly noticeably styptic.

In the state S. Paulo the powdered bark under the name *Pos de Santa Anna* is a specific for chronic diarrhœa and atonic dyspepsia. A half-teaspoonful is taken with water three times daily. In addition to the troubles named, the following affections are treated by physicians with this remedy: intestinal catarrh, enteritis, dysentery, *cantarrhalis* and lientery.

Two to four drops of the tincture (1:5 alcohol) is the dose for children, for adults two to five grams every three hours. The decoction, 30 grm.

* Continued from p. 155. Translated for the Review by Dr. R. H. True, Asst. Prof. of Pharmacognosy at the University of Wisconsin.

Grm. Colatur, wird kelchweise zwei- bis dreistündlich, das spirituöse Extract, in der Dosis von 0.05 bis 0.2 Grm. steigend, drei- bis viermal täglich genommen.

Die frische sowie die lufttrockene Rinde wurde untersucht. 50 Ko. der gestossenen frischen Rinde liefern bei der Destillation mit Wasser 20.8 Grm. ätherisches Oel. Dasselbe ist gelblich, von brennendem Geschmack, angenehm aromatischem Geruch, ähnlich dem einer Mischung von Sassafrass und Pichurim. Das sp. Gew. ist 0.960 bei 17° C.

Die lufttrockene Rinde verliert 12.9 p. c. Wasser und hinterlässt 1.92 p. c. Asche. Dieselbe liefert 20 p. c. spirituöses Extract. Dasselbe wurde in säurehaltigem Wasser gelöst, die vom Harz befreite Lösung zur Syrupconsistenz eingedämpft, alkalisch gemacht und mit Aether ausgeschüttelt. Die ätherische Lösung wurde verdunstet und nach zweimaliger Lösung und Ausschüttelung wurden 0.079 p. c. eines farblosen, amorphscheinenden Pulvers erhalten. Unter dem Mikroskop jedoch erwies es sich als krystallinisch. Es ist geruchlos, anfänglich geschmacklos, dann von stark bitterem Geschmack. Auf Platinblech erhitzt schmilzt es und erstarrt wieder beim Erkalten zu einer krystallinischen Masse. Weiter erhitzt verflüchtigt es sich vollständig. In Wasser ist es so gut wie unlöslich. Es ist jedoch löslich in angesäuertem Wasser, Aether und Alcohol. Die alcoholische Lösung reagirt alkalisch. Die Lösung gibt Präcipitate mit Mayers's Reagens, Sublimat und Goldchlorid.

Die wässerige Lösung des spirituösen Extractes wurde mit neutralem und dann mit basischem Bleiacetat gefällt und die von den Präcipitaten befreite Flüssigkeit von Blei befreit und zur dünnen Extractconsistenz abgedampft. Dieses Extract wurde mit absolutem Alcohol behandelt so lange sich derselbe noch färbte. Die alcoholische Lösung wurde durch Destillation zur Syrupconsistenz concentrirt und der Rückstand wiederholt mit Aether ausgeschüttelt. Der unlösliche Theil enthielt noch eine harzartige Substanz, wovon derselbe durch Behandlung mit Chloroform befreit wurde. Durch wiederholtes Lösen in absolutem Alcohol und Verdunsten über Chlorcalcium wurden 1.25 p. c. einer Masse erhalten, welche beim Verreiben ein hellbräunliches, geruchloses Pulver von bitterem Geschmack ergab. Dieser *Nectandra* Bitterstoff hinterliess beim Verbrennen auf Platinblech nur eine geringe Spur Asche. Es löst sich in Alcohol und Wasser. Die Lösung reagirt neutral. Mit Tanninlösung, Mayer's Reagens, Sublimat und Goldchloridlösungen giebt dieselben Niederschläge.

Aus dem Präcipitat des neutralen Bleiacetates wird 1.6 p. c. Gerbsäure erhalten. Getrocknet und gepulvert ist dieselbe hellröthlich, geruchlos und von stark styptischem Geschmack. Dieselbe ist in Alcohol und Wasser löslich. Eisenchlorid färbt die Lösung schwarz, Barytwasser verursacht einen bräunlichrothen, Kalkwasser einen hellbräunlichen Niederschlag. Kaliumchromat verursacht eine dunkelrothbraune Färbung, dann ein Gelatiniren der Lösung. Brechweinstein, Chininsulfat und Leimlösungen verursachen ebenfalls Niederschläge.

Aus dem durch basisch essigsaures Blei hervorgebrachten Niederschlag wird durch Lösung in absolutem Alcohol ein amorpher blutrother Farbstoff, 0.255 p. c., erhalten. Derselbe ist löslich in Alcohol und Wasser. Eisenchlorid verursacht eine rothbraune Färbung, Barytwasser ein rothes, Zinnchlorid ein carminrothes Präcipitat.

to 300 grm. of colature, is given a wineglassful every two to three hours; the alcoholic extract in a dose of from 0.05 to 0.2 grm. in increasing doses is given three to four times daily.

The fresh as well as the air-dried bark was investigated. 50 kilos of the powdered fresh bark furnished on distillation with water 20.8 grm. of ethereal oil. It is yellowish, of burning taste, agreeable, aromatic odor similar to a mixture of sassafras and pichurim. The sp. gr. at 17° C. is 0.960.

The air dried bark loses 12.9 percent of water and leaves 1.92 percent of ash. It yields 20 p. c. of spirituous extract. The same was dissolved in acidulated water, the solution freed from resin, evaporated to the consistency of syrup, made alkaline and shaken out with ether. The ethereal solution was evaporated off and after being twice dissolved and shaken out, 0.079 percent of a colorless, apparently amorphous powder remained. Under the microscope, however, it proved to be crystalline. It is odorless, at first tasteless, then with a strongly bitter taste. Heated on platinum foil it melts and solidifies again on cooling to a crystalline mass. Heated further it volatilizes completely. In water it is as good as insoluble. It dissolves, however, in acidulated water, ether and alcohol. The alcoholic solution reacts alkaline. The solution gives precipitates with Mayer's reagent, sublimates and gold chloride.

The aqueous solution of the alcoholic extract was precipitated with neutral and then with basic lead acetate and the liquid, freed from the precipitates, freed from lead and evaporated to the consistency of a thin extract. This extract was treated with absolute alcohol as long as it was still colored. The alcoholic solution was concentrated to a syrupy consistency by distillation and the residue repeatedly shaken out with ether. The insoluble part contained still a resinous substance of which it was freed by treatment with chloroform. By repeated solution in absolute alcohol and evaporation over calcium chloride, 1.25 p. c. of a mass was obtained which on pulverization gave a light brownish, odorless powder of bitter taste. This bitter principle of *Nectandra* on incineration on platinum foil left only a slight trace of ash. It dissolves in water and alcohol. The solution reacts neutral. With tannin solution, Mayer's reagent, sublimate and gold chloride solution, it gives precipitates.

From the precipitate of lead acetate, 1.6 p. c. of tannic acid was obtained. When dried and powdered, it is bright reddish, odorless and with a strongly styptic taste. It is soluble in alcohol and water. Iron chloride colors the solution black, baryta water gives a reddish-brown precipitate, lime water one light brownish. Potassium chromate causes a dark reddish-brown turbidity, then the gelatinizing of the solution. Tartar emetic, quinine sulphate and gelatine solutions give likewise precipitates.

From the precipitate obtained with basic lead acetate, an amorphous blood-red coloring matter, 0.255 percent, is obtained by dissolving in absolute alcohol. It is soluble in alcohol and water. Iron chloride calls forth a reddish-brown turbidity, baryta water a red, zinc chloride a carmine-red precipitate.

(To be continued.)

Popular Scandinavian Names of Drugs and Medicines.*

By *Harold Bruun.*

Kali, dobbelt vinsurt,	Potassium bitartrate.
" vinsurt,	" tartrate.
Kamille blomster,	Chamomile flowers.
" olje,	Oil of chamomile.
" the,	Chamomile flowers.
" romersk,	Roman chamomile.
Kamphor,	Camphor.
" draaber,	*Spiritus aetheris camphoratus.*
" olje,	Camphorated oil.
" " hvid,	*Linimentum camphoræ.*
" salve,	Camphor ointment.
" spiritus,	Spirits of camphor.
" vand,	Camphor water.
Kanel,	Cinnamon.
" olje,	Oil of cinnamon.
" vand,	Cinnamon water.
" draaber,	Tincture of cinnamon.
" " sure,	Aromatic sulphuric acid.
Karve,	Caraway seed.
" olje,	Oil of caraway.
" " romersk,	Oil of cumin.
Kardemom,	Cardamom.
" tinctur,	Tincture of cardamom.
Kaskarillebark,	Cascarilla bark.
Kassia laxer,	Purging cassia.
Kastanie,	Chestnut.
" blade,	Chestnut leaves.
" Heste-,	Horse chestnut.
Katechu,	Catechu.
Kathartensyre,	Cathartic acid.
Katost,	Marsh mallow.
Kattemynte,	Catnip.
Kautchuk,	Rubber.
Kermes,	Kermes mineral.
Kinoharpix,	Kino.
Kirsebaerbark, vild,	Wild cherry bark.
" sirup,	Syrup of wild cherry.
Kirselaurbaerblade,	Cherrylaurel leaves.
Kjelderhalsblast,	Mezereon bark.
" bark,	" "
Kjerner, Fiske-,	Fish berries.
Kjerner, Kvaede,	Quince seed.
Kjökkensalt,	Sodium chloride.
" soda,	Sodium bicarbonate.
Kjölende Salve,	Lead cerate.
" Pulver,	*Pulvis refrigerans.*
Klorkalcium,	Calcium chloride.
Klorkalium,	Potassium chloride.
Klorammonium,	Ammonium chloride.
Klorkalk,	Chlorinated lime.
Klornatron,	Sodium chloride.
Klorzink,	Zinc chloride.
Klovfedt,	Neatsfoot oil.
Knusk,	Punk.
Kobber,	Copper.
" vitriol,	Sulfate of copper.
Koblomme,	Cowslip.
Kochleare,	Scurvy grass.
Kongesalve,	*Unguentum basilicum*
Kokamilleblomster,	May weed. [*nigr.*
Kokosnöd,	Cocoanut.
Kokosnöd olje,	Cocoanut oil.
Kokablade,	Coca leaves.
Kollodium,	Collodion.
" elastisk,	Flexible collodion.
" Spanskfine,	Cantharidal collodion.
Kolophon,	Resin.
Koloqvinter,	Bitter apple.
Kolumborod,	Columbo root.
Kommenfrö,	Cumin seed.
" olje romerk,	Oil of cumin.
Kommen, romersk,	Cumin.
Kongevand,	Aqua regiæ.
Korbindikblade,	Blessed thistle.
Koriander,	Coriander.
" olje,	Oil of coriander.
Kornvalmue,	Red poppy.
Korsbaer sirup,	Syrup of buckthorn bark.
" (torn)saft,	Juice of buckthorn.
Kosso,	Kooso.
Kongechinabark,	Calisaya bark.
Kongelysblomster,	Mullein.
Koppesalve,	*Unguentum stibiatum.*
Kraftmel,	Starch.
Krageome,	Nux Vomica.
Krampedraaber,	*Liquor antispasticus.*
Krandsvine,	Nux Vomica.
Krap,	Madder.
Kreosot,	Creosote.
Kridt,	Chalk.
Krotonolje,	Croton oil.
Kryddernelliker,	Cloves.
" olje,	Oil of cloves.
Krusemynte,	Curled mint.
" olje,	Oil of curled mint.
Kubeber,	Cubebs.
Kul, praepareret,	Charcoal, prepared.
Kulsurt Ammoniak,	Ammonium carbonate.
" Barium,	Barium carbonate.
" Jernoxydul,	Subcarbonate of iron.
" Kalcium,	Calcium carbonate.
" Kali,	Potassium carbonate.
" Kalioplösning,	Solution of potassium carbonate.
" Lithium,	Lithium carbonate.
" Natron,	Sodium carbonate.
" Magnesia,	Magnesium carbonate.
Kyndel,	Summer savory.
Kviksölv,	Mercury.
" renset,	" purified.
" sublimat,	Corrosive sublimate.
" Chlor,sublimeret,	Calomel.
" Jod, grön,	Green iodide of mercury.
" oxyde, gult,	Yellow oxide of mercury.
Kvadekjerner,	Quince seed.
Lakritsrod,	Licorice root.
Lakrits,	Extract of licorice, crude.
Lapis infernalis,	Silver nitrate.
Laurbaerblade,	Laurel leaves.
Laurbaerolje,	Oil of laurel.
Laudanum,	*Vinum opii crocatum.*
Lavendelblomster,	Lavender.
" olje,	Oil of lavender.
" " almindelig,	Oil of spike.
Laxer-kassia,	Purging cassia.
Lerkesvamp,	Purging agaric.
Levertran,	Cod liver oil.
Leverurt,	Liverwort.
Liguster,	Privet.
Liljekonval,	Lily of the valley.
Lindeblomster,	Linden flowers.
Lithium, citronsurt,	Lithium citrate.
" kulsurt,	" carbonate.

* Copyrighted. Continued from p. 222.

Livstrae,	Thuja.
Lobelia-eddike,	Vinegar of lobelia.
Linfrö,	Linseed.
" olje,	Linseed oil.
" mel,	Linseed meal.
Liqv. cornu cervi,	*Liquor supercarbonatis ammoniaci pyrooleosi.*
Liqv. nervinus,	*Spirit. aetheris camphoratus.*
Loppefrö,	*Semen psylii.*
Lungeurt,	Lungwort.
Lusefrö,	Sabadilla seed.
Lusesalve,	Mercurial ointment.
Lybstykke,	Livstick.
Laebe pomade,	Lip pomade.
Laerketraebark,	Larch bark.
Lög,	Onions.
" draaber	fr asafetida.
Magnesia, braendt,	Magnesia.
" citronsurt,	Magnesium citrate.
" hvid,	" carbonate.
" kulsurt, let,	" carbonate.
" svovlsurt,	" sulphate.
Magnetjern,	Magnetic oxide of iron.
Malurt,	Wormwood.
" tinctur,	Tincture of wormwood.
" Strand,	Levant worm seed.
Malva,	Malva.
Manconabark,	Sassy bark.
Mandelolje, bitter,	Oil of bitter almonds.
" söde,	Oil of sweet almonds.
Mandelvand,	Almond water.
" mel,	Almond meal.
Mandler, söde,	Sweet almonds.
Manganhyperoxyd,	Peroxide of manganese.
Manganoxydul,svovlsurt,	Manganese sulphate.
Mangostanebark,	Mangosteen.
Maticoblade,	Matico leaves.
Mavedraaber,	Stomach drops.
Medicintran,	Cod liver oil.
Melbaerblade,	Uva Ursi.
Melk,	Milk.
Melkesukker,	Sugar of milk.
Melkesurt Jernoxydul,	Lactate of iron.
Melotenurt,	Melilot.
Melotenplaster,	Melilot plaster.
Meldröie,	Ergot.
Merian,	Sweet majoram.
" olje,	Oil of origanum.
" vild,	Wild majoram.
Mesterrod,	Masterwort.
Methylaether,	Methyl ether.
Mineralvande,	Mineral waters.
Mistel,	Mistletoe.
Moder draaber,	*Tinctura antihysterica.*
" extract,	*Species ad longam vitam.*
" korn,	Ergot.
Modgift mod Arsenik,	Antidote for arsenic.
Monobromkampher,	Monobromate of camphor.
Morbaer,	Mulberry.
Morgenfrue.	Marigold.
Morphin, eddikesurt,	Morphine acetate.
" saltsurt,	Morphine hydrochloride.
" svovlsurt,	Morphine sulphate.
Mos, islandsk,	Iceland moss.
" karagen,	Irish moss.
Musennabark,	Musenna.
Muskatblomme,	Mace.
" olje,	Oil of mace.
" nödder,	Nutmeg.
Muskatbalsam,	Oil of nutmeg.
Myresyre,	Formic acid.
Myrt,	Myrtle.
Mixtur, sur,	*Mixtura acida.*
Mavesaft,	Gastric juice.
Nafta,	Ether.
" vitriol,	Sulphuric ether.
Natron, arseniksurt,	Sodium arsenate.
" baldriansurt,	" valerianate.
" borsurt,	" borate.
" dobbelt kulsurt,	" bicarbonate.
" eddikesurt,	" acetate.
" kulsurt,	" carbonate.
" phenylsurt,	" carbolate.
" phenylsvovlsurt,	" sulphocarbolate.
" salpetersurt,	" nitrate.
" svovlsurt,	" sulphate.
" phosphorsurt,	" phosphate.
" underphosphorsyrligt,	" hypophosphite.
" undersvovlsyrligt,	" hyposulphite.
" aets,	Caustic soda.
Natskygge,	Belladonna root.
Neldebraende. Nesle,	Nettle.
Nellik,	Cloves.
" olje,	Oil of cloves.
Nellikrod,	Water avens.
Nervedraaber,	Camphorated spirits of ether.
Nitrum,	Potassium nitrate.
Nödklovfedt,	Neatsfoot oil.
Nyserod, grön,	American hellebore.
" hvid,	White hellebore.
" sort,	Black hellebore.
Olje,	Oil.
" Amerikansk,	Castor oil.
" Anis,	Oil of anise.
" Baldrian,	Oil of valerian.
" Bom-,	Olive oil.
" Citron,	Oil of lemon.
" Dil,	Oil of dill.
" Dippels,	Animal oil.
" Enebaer,	Oil of juniper.
" Fennekel,	Oil of fennel.
" Hestemynte,	Oil of horsemint.
" Humle, spansk,	Oil of origanum.
" Hörfrö,	Linseed oil.
" Kamille, romersk,	Oil of chamomile.
" Kamphor,	Camphorated oil.
" " hvid,	Camphor liniment.
" Kanel, ceylonsk,	Oil of cinnamon.
" " indisk,	Oil of cassia.
" Kokosnöd,	Cocoanut oil.
" Kommen,	Oil of caraway.
" " romersk,	Oil of cumin.
" Koriander,	Oil of coriander.
" Kroton,	Croton oil.
" Kubeber,	Oil of cubeb.
" Laurbaer,	Oil of bay.
" Lavendel,	Oil of lavender.
" " almindelig,	Oil of spike.
" Mandel, bitter,	Oil of bitter almonds.
" " söd,	Oil of sweet almonds.
" Merian,	Oil of origanum.
" Muskatblomme,	Oil of nutmeg.
" Nellik,	Oil of cloves.
" Ormefrö, amerikansk,	Oil of American wormseed.
" Pebermynte,	Oil of peppermint.
" Peber, spansk,	Oil of capsicum.
" Rav,	Oil of amber.
" Reinfan,	Oil of tansy.

(To be continued.)

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.*

By *Edward Kremers.*

One might suppose that with the presentation of the petition to the Common Council all interest in the subject would have abated for the time being, leaving matters to take their slow legislative course. Not so, however.

Evidently with the intention of bringing about a better understanding of the entire question, which must have been rather incomprehensible to many, and with the object of furthering a good cause the "Herold" discussed the subject semi-editorially in its Sunday edition, the "Volks-Magazin", in an article entitled "On the scientific education of the pharmacist." [*Document 15.*] Attention is called to the fact that in Europe (Germany evidently is meant), the cradle of scientific pharmacy, the pharmacist must be an educated man. Furthermore that the state is very strict in holding the apothecary to the legal requirements regulating the practice of his profession and that to insure good service the apothecary shops are inspected by government officials.

The writer calls attention to the fact that there are in this country a number of druggists who have obtained a thorough training in Europe, also that on the other hand we have many who "play" with the lives of their fellow citizens. He then comments favorably on the attempt on the part of the Milwaukee druggists to improve the situation, calling for a general support.

Finally the writer points to the need of some knowledge of Latin on the part of the druggists and directs attention to an advertisement of Mr. Paul Brunnquell [*Document 16.*] who expresses his willingness to teach Latin should a sufficient number of students apply.

A Quack: Etching from Grimmelshausen's Simplicismus. Nuernberg, 1685.

(From Peters: Aus pharm. Vorzeit II, p. 243.)

The same number of the "Volks-Magazin" also contains a communication by Mr. O. A. Thiele [*Document 17.*]. The writer of the communication tries to defend the secretary of the meeting held on the 13th against the anonymous writer of the "Seebote" of the 17. He then calls attenton to the fact that in the apparent simplicity of the modern druggist's duties lies a grave danger. The very fact that he can purchase almost everything ready-made from the manufacturer is a menace in itself if the druggist is ignorant or unscrupulous or both. Every druggist should be able to at least examine the drugs and chemicals used in the compounding of prescriptions. So much at least should by demanded by law for the safety of the public. Attention is called to the fact that New York has a law of this kind which has been productive of some good. The "Seebote was requested to copy this communication and complied with the request on the following day, adding, however, an editorial note [*Document 18.*] in which the editor disclaims the responsibility of correcting communications with reference to their style before publishing them gratis. Mr. Roemheld's own defense was communicated to the "Banner"? [*Document 19.*]

To the semi-editorial in the Sunday "Herold" and the communication by Mr. Thiele the anonymous writer of the "Seebote" (Sept. 17.) took exception in a second communication to the same paper on the following day. [*Document 20.*] He calls attention to the fact, that it is necessary to measure by American, not by European standards. The U. S. Pharmacopœia and its commentaries are published in the English language, hence a knowledge of Latin is not necessary on the part of the pharmacist to be able to read his "bible". As to nomenclature a knowledge of Greek would be equally desirable with Latin. A knowledge of the classics on the part of the American youth would be highly desirable, but is not absolutely necessary for the practice of pharmacy. The pharmacist is but a servant ("Famulus") of the physician and most American physicians practice their profession without a knowledge of Latin. Physicians should be accused of criminal negligence for writing unintelligible prescriptions and all druggists should decline to fill such prescriptions which is mere guesswork.

The writer is further of the opinion that if the factories are so great an element of danger as depicted it were better to place the factories under governmental control than the drug stores. He concludes with an appreciatory remark on the desire to improve ones calling, but desires that no injustice be done and that all Milwaukee druggists who have a good name join the movement.

This communication brought forth a reply on the part of the writer of the "Volks-Magazin," entitled "More about the education of pharmacists and the Latin language." [*Document 21.*] The author dwells at length on the educational value of the Latin language and criticizes some of the statements of the "Seebote" correspondent. The latter replies to the two installments contained in the Sunday and Monday numbers of the "Herold" by sending two communications to the Monday

* Continued from p. 225.

and Tuesday numbers respectively of the "Seebote" [*Document 22*]. These communications are by no means devoid of interest, inasmuch as they give vivid expression to the intensity of feeling at that time. The sum and substance of the articles of the "Herold" correspondent is that some knowledge of Latin is requisite in the education of the pharmacist, whereas the other denies the absolute necessity of such knowledge, at least as far as the American pharmacist is concerned. If two indications in the articles of the "Seebote" correspondent are worth their face value, it would seem probable that Mr. Brunnquell, who advertised a Latin school for prospective pharmacists in the "Wegweiser" (see Document 16), was the correspondent for the "Herold."

With this the controversy seems to have ended and the excitement abated, at least for the time being. Yet the further course of pharmaceutical legislation in Milwaukee was not altogether uneventful.

Document 15.

[*Volks-Magazin, Sonntags-Ausgabe des "Herold"*, Sept. 19, 1875. (p. 413, col. 1.)]

Die wissenschaftliche Bildnng des Pharmaceuten.

Dass der Pharmaceut ein wissenschaftlich gebildeter Mann sein muss, dass er eingehende Kenntnisse in Chemie, Physik, Botanik und anderen Disciplinen besitze, versteht sich in dem alten Europa, der Wiege und Schule wissenschaftlicher Pharmacie, von selbst. Staat und Publikum wachen dort mit strengen Augen darüber, dass nur Solche, welche in Theorie und Praxis den unerlässlichen Anforderungen an einen zuverlässigen Apotheker entsprechen, zu der verantwortlichen Stellung eines Apotheken-Besitzers oder dessen Stellvertreters, des Provisors, zugelassen werden. Die Fürsorge des Staates erstreckt sich sogar so weit, das von seiner Seite aus regelmässige Inspectionen bezüglich der Güte der in der Apotheke vorhandenen Waaren, bezüglich des Vorhandenseins oder des strenge bestraften Fehlens wichtiger Droguen vorgenommen werden.

Der Staat verlangt ferner, dass stets entweder der Apotheker selbst oder sein vom Staate geprüfter Stellvertreter anwesend sei, er leidet nicht, dass ein noch Lernender, ohne gehörige Aufsicht Medikamente bereite, oder solche verabfolge. Und das mit vollem Rechte! Oder sollte es auch Unmündigkeit des Staatsbürgers, unberechtigter Eingriff des Staates in die individuelle Freiheit heissen, wenn das Gemeinwesen über das körperliche Wohl und das Leben seiner Angehörigen wacht? Wir haben hierzulande eine Menge auf oben erwähnte Weise in Europa, vor Allem in Deutschland, ausgebildeter Pharmaceuten, wie ferner eine grosse Anzahl Solcher, welche unter Anleitung derart erprobter Meister in ihrem Fache, in Amerika ihrem Berufe Ehre machen lernten. Wir haben aber leider auch eine Menge durchaus Unberufener, welche täglich mit dem Wohl und Wehe, ja dem Leben ihrer Mitbürger ein gefährliches, frevelhaftes Spiel treiben.

Mit Freuden begrüssen wir daher das entschlossene und Segen versprechende Zusammenstehen und Vorgehen erprobter Apotheker unserer Stadt, hoffentlich auch bald des ganzen Staates Wisconsin, welche von dem festen Bestreben nicht ablassen werden, in unsere zum Theil so mangelhaften pharmazeutischen Verhältnisse Licht und Ordnung zu bringen. Und Jeder, dem das Leben seiner Angehörigen, das Wohl seiner Mitmenschen am Herzen liegt, wird diese Herren in ihrem redlichen Bemühen eifrigst unterstützen; dessen sind wir sicher.

Zu jenem Wissen nun, welches der Pharmaceut zum richtigen Verständniss der Pharmacopœ, zur Receptur, zum leichteren Begreifen und im Gedächtniss Behalten der botanischen und druggistischen Nomenclatur besitzen soll, gehört auch die lateinische Sprache.

Er braucht nicht gerade in europäischer Manier zu einem zweiten Cicero oder Tacitus gemacht zu werden, er soll aber wenigstens im Stande sein, einen leichten Schriftsteller, wie den Cornelius Nepos, seine Bibel, die Pharmacopœ und alles das zu verstehen, was ihm bei seiner Thätigkeit in diesem einmal zur Sprache der Wissenschaft gewordenen Idiom unterläuft.

Gelegenheit, sich diese Kenntnisse im Lateinischen zu erwerben, bietet sich jetzt, da Herr Paul Brunnquell, welcher dieses Fach schon seit Jahren vertritt, einen mit erstem October d. J. beginnenden lateinischen Cursus eröffnen wird. Derselbe wird, sobald die Schüler genug vorgeschritten, auf das specielle sprachliche Verständniss der Pharmacopœ hinarbeiten.

Wir verweisen unsere Leser hiermit mit Vergnügen auf diese Gelegenheit (siehe das im heutigen Wegweiser enthaltene Inserat) nnd sind der Ansicht, dass hiermit schon ein Schritt zu dem von dem Apotheker-Vereine angestrebten Ziel geschehen ist.

Document 16.

[*Wegweiser*, d. 19. Sept. 1875. (p. 2, col. 1.)]

Für junge Pharmacenten.

Unterzeichneter wird mit 1. October einen Abendcursus für die lateinische Sprache eröffnen.

Je nach den Anmeldungen wird ein Cursus für Anfänger und einer für Solche, welche schon Kenntnisse in dieser Sprache erlangt haben, eingerichtet werden.

Auf das Verständniss der lat. Pharmacopœ wird besondere Rücksicht genommen werden.

Paul Brunnquell,
Ecke Market und Oneida Str., Greve Block.
Sprechstunden Vormittags 9—12 Uhr.

Document 17.

[*Volks-Magazin*, Sunday, Sept. 19. 1875. (p. 413, col. 2)].

(Eingesandt.)

Im "Seebote" vom 17. d. M. befindet sich ein Eingesandt, welches auf ein anderes, wenige Tage früher in demselben Blatte erschienenes, die Vereinigung der Apotheker betreffend, Bezug nimmt.

Was vor allen Dingen den kritisirten Styl des früheren Artikels betrifft, so glaube ich nicht, dass derselbe aus Unwissenheit und Unkenntniss der deutschen Sprache, seitens des Herrn Verfassers, geworden ist, wie er ist, sondern dass der Herr Einsender den ganzen Artikel nur flüchtig und oberflächlich niedergeschrieben hat, in der Absicht, den Redactionen der betreffenden Zeitungen einen Inhalt über die Verhandlungen und Grundsätze des, sich bilden wollenden, Vereins zu geben. Die Redaktionen des "Banner" und der „Germania" haben es auch in dem Sinne aufgefasst (siehe die betr. Nummern), und kann ich kaum glauben, dass der Herr Verfasser den Artikel der Redaktion des "Seebote" übergeben haben wird, ohne eine derartige Bemerkung zu machen.

Der betreffende Herr hatte die Namen der, in der Versammlung anwesenden, Apotheker jedenfalls nur in der Absicht unter das betreffende Schriftstück gesetzt, um dieselben der Redaktion mitzutheilen, damit sie bei Abfassung eines, darauf bezüglichen, Artikels verwendet werden konnten.

Der Herr Einsender vom 17. d. sagt selbst, dass er nicht Apotheker ist, dass er jedoch mit der amerikanischen Apothekerei ziemlich vertraut sei. Die amerikanische Apothekerei, wie sie noch in dem grössten Theile der Ver. Staaten betrieben wird, hat eben ihre sehr grossen Mängel und ist in derselben dort, wo sie nach, durch die Legislaturen sanktionirten Gesetzen, die theils den in Europa gültigen, ähnlich sind, betrieben wird, z. B. New York, eine ganz bedeutende Aenderung zum Besseren eingetreten.

Wenn der Herr Einsender vom 17. Apotheker wäre, so würde er wissen, dass die grösste Gefahr für das Publikum nicht in den Fehlern liegt, die möglicher Weise

bei Anfertigung von Rezepten gemacht werden könnten, sondern gerade in dem Punkte, den er als so sehr erleichternd und jede Gefahr geradezu ausschliessend, preist, nämlich, dass für die amerikanische Apothekerei so ziemlich alles fix und fertig in chemischen Fabriken zu haben ist.

Wie fahrlässig hier zu Lande Fabriken betrieben werden, und die chemischen machen keine Ausnahme, wird fast Jedermann bestätigen können, der mit solchen Etablissements je in Berührung kam und jeder wirkliche Apotheker, der skrupulös genug ist, seine gekauften Chemikalien zu untersuchen, ehe er dieselben für die Rezeptur verwendet, kann ein Lied davon singen, wie mangelhaft dieselben häufig sind, selbst wenn sie aus unseren berühmtesten chemischen Fabriken stammen.

Vor etwa einem Jahr kam Einsender ein Fall vor, der die Fahrlässigkeit, mit der in chemischen Fabriken zu Werke gegangen wird, in das grellste Licht stellt. Einsender hatte schwefelsaures Morphin, das von einer unserer renommirtesten Fabriken stammte, gekauft und dasselbe jedesmal, wenn eine neue Flasche geöffnet wurde, untersucht. Bei der fünften oder sechsten Flasche fand derselbe, dass das in der Flasche enthaltene Morphin nicht rein sei, sondern fast 10 Prozent salzsaures Chinin enthalte, was wahrscheinlich aus Versehen, Absicht kann nicht vorliegen, unter das Morphin gekommen war. In diesem Falle konnte durchaus kein Unheil entstehen, selbst wenn es nicht bemerkt wäre, aber könnte nicht der umgekehrte Fall vorkommen, das bei eben solcher Fahrlässigkeit Morphin unter Chinin gekommen sein könnte? Wodurch vor etwa zwei Jahren in Frankreich und Belgien einige Menschenleben dem Versehen einer chemischen Fabrik zum Opfer fielen.

Alles, was wir verlangen und erstreben wollen, ist, das Gesetze passirt werden, die dafür sorgen, dass das Publikum so viel wie möglich geschützt werde, dass jeder Apotheker im Stande sein soll, seine, wenigstens in der Rezeptur gebrauchten, Chemikalien und Droguen zu untersuchen und, falls keine fehlerfreien Präparate zu haben sind, dieselben selbst anfertigen zu können.

Was den Passus der 15jährigen Praxis betrifft, so wäre darüber leicht hinweg zu kommen, wenn der Betreffende in einem, vor einer Kommission zu machenden, Examen, das jedenfalls nicht zu schwer ausfallen würde, die nöthigen Kenntnisse nachweist, auch könnte der Paragraph später, wenn nöthig befunden, auf irgend eine Art amendirt werden, da die betreffende Versammlung am 13. d. M. nur eine vorberathende war.

Otto A. Thiele.

Seebote wird ersucht copiren zu wollen.

[Copied by Seebote Sept. 20, p. 4, col. 4.]

Document 18.

[*Seebote*, Monday, Sept. 20. 1875. (p. 4, col. 4.)]

(Eingesandt.)

(*Anm. d. R.* In Bezug auf die Bemerkung des Herrn Einsenders, er könne kaum glauben, dass der Verfasser des erwähnten "Eingesandt" dasselbe der Redaktion des "Seebote" übergeben habe, ohne daran die Bemerkung zu knüpfen, dass er den Artikel nur flüchtig und oberflächlich niedergeschrieben, und dann wohl habe voraussetzen dürfen, die Redaktion werde etwaige Stylfehler korrigiren, haben wir zu entgegnen, dass uns keine derartige Mittheilung gemacht wurde und wir, da wir uns zu der Annahme berechtigt glaubten, eine aus solcher Quelle stammende Zuschrift bedürfe keines Schulmeisters, dieselbe ohne Abänderung in die Setzerei gaben. Ausserdem war das betreffende "Eingesandt" von einer Anzahl unserer prominentesten Apotheker unterzeichnet, was also die Annahme ausschloss, dass es nur ein flüchtig hingeworfener Entwurf sei. Hier mag übrigens die Bemerkung noch Platz finden, dass unserem Dafürhalten nach Zeitungsredaktionen nicht dazu da sind, um als öffentliche Korrektoren zu fungiren und die ihnen vom Publikum zugehenden Einsendungen, welche dazu noch unentgeltlich veröffentlicht werden, zu verbessern oder am Ende noch gar gänzlich umzuarbeiten.

Document 19.

[*Banner und Volksfreund*,

(Eingesandt.)

In dem Sonntagsblatte des „Herold" wurde ich durch ein Eingesandt auf einen Artikel und eine frühere Bemerkung des „Sebote" aufmerksam, und sehe ich mich deshalb veranlasst, zu meiner Rechtfertigung folgendes darauf zu erwiedern: Mein Eingesandt war blos als ein Prospect aufzufassen. Dasselbe ist laut Beschluss der Versammlung den Herren Redakteuren der betreffenden Zeitungen zugestellt worden und wurde von mir nur eilig aufgesetzt. Bei Abgabe desselben hielt ich keine Erörterung für nöthig, da ich voraussetzte, dass die Herren Redakteure eine „Revision" vornehmen werden.

Die Befürchtung des Herrn Einsenders, das der Styl des Eingesandt wissenschaftliche Bildung ausschlösse, fällt, glaube ich, vollständig zusammen, wenn ich dem Herrn Zeugnisse, nach dem Medicinalgesetze Preussens, von der Reife Obersecundas und mehrerer im Apothekerfache bestandenen Examina ebendaselbst, zur Einsicht stellen, ebenso ein amerikanisches Examendiplom nebst mehrerer Licensen zur Berechtigung des Verkaufs von Giften und Zusammensetzung von Medicamenten.

Was den Zweck des Vereins betrifft, so ist derselbe schon genügend erörtert, und der Herr Einsender, der von der Apothekerei schon viel zu verstehen glaubt, wird gewiss, wenn er sich noch etwas mehr damit beschäftigen wollte, die grossen Mängel erkennen, die ohne Gesetz diesem Geschäfte noch anhaften.

F. Roemheld.

Document 20.

[*Der Seebote*, Monday, Sept. 20, 1875. (p. 4, col. 3 and 4.)]

(Eingesandt.)

In der letzten Sonntagsnummer des „Herold" befinden sich zwei Aufsätze, in welchen die hier kürzlich aufgetauchte Apothekerfrage des Näheren besprochen wird, und müssen die darin entwickelten Grundgedanken über die, durch den zu bildenden pharmazeutischen Verein, anzustrebenden Zwecke, die volle Billigung eines jeden vernünftigen Menschen finden. Gewiss muss von einem jungen Menschen, der sich zum Apotheker ausbilden will, ein bestimmtes Mass von Schulbildung gefordert, jedoch müssen die in dieser Hinsicht gestellten Forderungen nach hiesigen und nicht nach europäischen Verhältnissen bemessen werden. In dem, "die wissenschaftliche Bildung des Pharmaceuten", überschriebenen Artikel wird die Kenntniss der lateinischen Sprache als unerlässlich nothwendig, auch für einen hiesigen Apotheker, hingestellt. So viel mir bekannt, sind sämmtliche hier in den Vereinigten Staaten massgebende Werke über Pharmacopœ in englischer Sprache abgefasst, und auch die mir zu Gesicht gekommenen Werke anderer Länder über dasselbe Thema, waren grösstentheils in den betreffenden Landessprachen geschrieben. Was die Nomenclatur in der Natur- und Arzneiwissenschaft anbetrifft, soll hier nur bemerkt werden, dass nicht nur der lateinischen, sondern auch der griechischen Sprache viele gebräuchliche Bezeichnungen entnommen sind. Mit demselben Rechte also, mit dem man von einem jungen Manne die Kenntniss der lateinischen, könnte man von ihm die der griechischen Sprache verlangen. Es wäre gewiss höchst erfreulich, wenn die alten Sprachen von der amerikanischen Jugend mehr kultivirt würden, der Behauptung aber, die Kenntniss der lateinischen Sprache sei für einen tüchtigen Apotheker durchaus nothwendig, können wir, nach reiflichem Ueberlegen, kaum beistimmen. Der Apotheker ist gewissermassen doch nur der Famulus des Arztes; bedenkt man nun aber wie viele Aerzte hier in den Ver. Staaten praktiziren ohne von der lateinischen Sprache eine Ahnung zu haben, so muss man das Verlangen, ein jeder sich der Pharmacopœ widmende junge Mann sollte die Fähigkeit besitzen lateinische Klassiker zu lesen, zum mindesten als verfrüht bezeichnen. Da gerade von den Herren Aerzten die Rede ist, soll ein Punkt, der in dem am 17. d. M. im "Seebote"

erschienenen "Eingesandt" kurz berührt wurde, hier nochmals angeführt werden. Der Einsender meinte da, es würde viel zur Beseitigung von Missgriffen beitragen, wenn sich die Herren Aerzte bei'm Schreiben ihrer Rezepte einer deutlicheren Handschrift befleissigen würden. Diese Bemerkung, so kurz sie war, machte auf einen Uebelstand aufmerksam, dem von den Betreffenden grössere Beachtung geschenkt werden sollte. Dies polizeiwidrige Geschmier, aus dem oft buchstäblich kein Mensch klug werden kann, und bei welchem der Apotheker auf's Rathen angewiesen ist, muss ein Ende nehmen. Alle Apotheker Milwaukee's sollten derartige Skripturen zurückweisen und die betreffenden Aerzte wegen muthwilliger Gefährdung von Menschenleben anklagen. Ein gelehrter Mann muss vor allen Dingen, wenn nicht schön, so doch leserlich schreiben können, meint er aber er hätte das seiner Gelehrsamkeit wegen nicht nöthig, so soll ihm von Rechts wegen gezeigt werden, dass er sich auf dem Holzwege befindet.

The public preparation of electuary of theriac.

(From Peters: Aus pharm. Vorzeit I, p. 141.)

In dem "Eingesandt" im gestrigen "Herold" wird der schlechte Styl des zuerst ershienenen Aufrufs dahin entschuldigt, der Verfasser des Artikels hätte geglaubt, die Redaktion des "Seebote" würde die nothwendige Stylisirung selbst ausführen. Es sollte einem Jeden bekannt sein, wie sehr der Redakteur eines täglich erscheinenden Blattes mit Arbeit überhäuft ist, und demnach finden wir eine derartige Forderung zum Mindesten naiv. Die Redaktion soll das betreffende "Eingesandt" nicht nur unentgeltlich aufnehmen, sondern der mit Arbeiten überhäufte Redakteur auch den ihm in abgerissenen Worten mitgetheilten Gedanken das nöthige Kleid anziehen. Oft sind die Herren so gutmüthig und erfüllen derartige Forderungen, werden jedoch noch oft für ihre Mühe und Arbeit mit Vorwürfen und Grobheiten belohnt, wenn sie aus den ihnen übergebenen Anmerkungen beim besten Willen den Sinn nicht herausfinden konnten, den der betreffende Einsender hineingelegt zu haben vermeinte. Man kann deshalb der Redaktion des "Seebote" nur beistimmen, wenn sie die ihr übersandten Schriftstücke genau so der Oeffentlichkeit übergibt, wie sie ihr übergeben werden. Was dann weiter über die gesetzlich regulirten Verhältnisse der Apotheken New York's gesagt wird, muss hier aus Rücksicht für den Raum übergangen werden, erwähnt sei nur die Thatsache, dass Schreiber dieses im Jahre 70 in acht verschiedenen Apotheken New York's vergeblich nach bitteren Mandeln suchte und auch in der neunten nur zwei Unzen erhalten konnte, da nicht mehr vorhanden waren. Die Behauptung, dass gerade die grösste Gefahr für das Publikum darin bestehe, dass die amerikanischen Apotheker die meisten Präparate fix und fertig aus chemischen Fabriken beziehen, ist denn doch zum mindesten sehr verdächtig. Erstens, wenn in diesen Fabriken wirklich so unzuverlässig gearbeitet wird, wenn es nothwendig ist, dass alle aus denselben bezogenen Präparate einer genauen Untersuchung von Seiten des betreffenden Apothekers unterworfen werden müssen, wie kommt es dann, dass diese Fabriken bestehen können, dass sie nicht durch Schadenersatzklagen von Seiten der geschädigten Apotheker, durch Verminderung der Kundschaft u. s. w. schon längst zu Grunde gerichtet worden sind. Ferner sollte man doch meinen, wenn eine staatliche Ueberwachung durchaus nothwendig wäre, so wäre dieselbe entschieden leichter bei den wenigen chemischen Fabriken, als bei den tausenden Apotheken durchzuführen, und blos so beiläufig gefragt: Wie spielt das "Packetchen" denn eigentlich bei den Patentmedizinen? Die werden doch jedenfalls von keinem Apotheker hiesiger Stadt einer chemischen Analyse unterworfen und trotzdem bemüht sich ein jeder dieser Herren, so viel wie möglich von diesem edlen Stoff zu verkaufen.

So, das waren so einzelne Gedanken über die Angelegenheit von einem Unparteiischen. Das Bestreben, seinen Stand zu veredeln und von unlauteren Elementen frei zu halten, ist durchaus lobenswerth und gut, niemals aber soll man sich durch zu grossen Eifer für die gute Sache zu Ungerechtigkeiten gegen seine Standesgenossen hinreissen lassen. Ein Apothekerverein, wenn einmal gebildet und mit richtiger Umsicht geleitet, kann und wird sehr viel Gutes stiften, um jedoch die ganze Bewegung zu einer wahrhaft fruchtbringenden zu machen, ist es nothwendig, dass alle Apotheker hiesiger Stadt, die sich eines guten Rufs erfreuen, einmüthig zusammenwirken.

Document 21.

[Sonntags-Ausgabe des *Herold*, Sept. 26, 1875. (p. 5, col. 3.)]

Noch etwas über die Bildung junger Pharmaceuten und die lateinische Sprache.

Die Montagsnummer des "Seebote" bringt auf den in der vorigen Sonntagsausgabe des "Herold" enthaltenen Artikel "Die wissenschaftliche Bildung des Pharmaceuten" eine Erwiederung, mit deren Ansichten wir uns durchaus nicht einverstanden erklären können und deshalb bei der von uns von Anfang an aufgestellten Behauptung beharren müssen. Wir unsererseits rechnen zu dem von dem "Seebote" Correspondenten verlangten Mass von Schulbildung des Pharmaceuten auch einen gewissen Schatz lateinischer Sprachkenntniss und betonten neulich ausdrücklich, dass das Verständniss eines leicht zu übersetzenden römischen Schriftstellers, wie des Cornelius Nepos, für den angestrebten Zweck ausreichend sein dürfte. Von der Fähigkeit, lateinische Schriftsteller überhaupt, das heisst so viel wie alle oder auch schwere als den genannten, lesen zu können, sprachen wir nicht und ersuchen deshalb den Einsender, uns nicht Worte unterzuschieben, welche wir nicht gebraucht.

Mit unseren bescheidenen Anforderungen an die Latinität des Pharmaceuten haben wir uns ferner auch noch lange nicht bis zu den Anforderungen verstiegen, welche in dieser Beziehung in Europa an den Pharmaceuten gestellt werden. Obwohl wir erst wenige Jahre in diesem Lande weilen, haben wir doch schon einsehen gelernt, dass die Verhältnisse desselben anders liegen, als die europäischen, und sind weit davon entfernt, die oft übertriebenen europäischen Anforderungen, über welchen so oft die Praxis des Lebens vergessen wird, als Norm aufzustellen. Wir wollen also, um es nochmals zu wiederholen, keinen Cicero und Tacitus, wohl aber mindestens einen kleinen Cornelius Nepos aus unseren sich heranbildenden Pharmaceuten machen. Und wenn der ganze Vortheil, welcher aus der Annahme unseres Vorschlages entstünde, nur die Gymnastik des Geistes, die Anstrengung des Denkvermögens, die Entwickelung logischen klaren Denkens wäre, so wäre das für den jungen Pharmaceuten allein schon genug der Anforderung, sich einigermassen Kenntniss einer Sprache zu erwerben, welche, wie wir neulich hervorhoben, nun einmal die Sprache der Wissenschaft geworden ist, auf welcher sich ferner das Gebäude sämmtlicher moderner romanischer Sprachen erhebt, an deren Hand wir endlich den Satzbau einer jeden anderen Sprache, sie möge einem beliebigen Sprachgebiete angehören, ja selbst unserer deutschen Muttersprache, besser verstehen und anwenden lernen. Der grosse directe und indirecte Nutzen, der reiche Genuss, welchen uns die lateinische Sprache bietet, sollten Jedem zugänglich sein, dessen Laufbahn auf wissenschaftlicher Thätigkeit und geistiger Fortbildung beruht. Und zu dieser Klasse der Menschheit gehören denn doch wohl die Pharmaceuten, jene blossen *famuli* der Aerzte, wie sie der Schreiber des Seebote-Artikels so unendlich liebenswürdig zu benamsen beliebt. Ja wohl, *famuli* der Aerzte, in jenem Sinne nämlich, dass jeder Stand auf Erden dem anderen dient, dass jeder für den anderen wirkt und nur vereinter Kräfte Walten unsere ganze Cultur schuf. Die alten amerikanischen Zeiten sind bald vorüber; wer Augen hat um zu sehen, muss bemerken, dass auch in Amerika die Berufsarten sich scheiden, dass man allmälig doch auch zu des alten Culturlandes Europa Verlangen kommt, in jedem Stande (nicht etwa in socialer Beziehung möge dieses Wort aufgefasst werden) speciell für denselben vorbereitete Kräfte zu haben, dass man nicht mehr heute Tischler, morgen Apotheker, heute Schlosser, morgen Maler sein kann. Jeder Beruf soll Vollkommenes leisten, verlangt gründliche, lang dauernde Vorbereitung und Ausbildung. Schon ist unser Land bevölkert genug, um für jedes Fach speciell ausgebildete Leute verlangen zu können. Das Pionierleben ist in den meisten der Staaten vorüber und überall da, wo schon das vollkommenste Culturleben herrscht, verlangt man auch Fachleute, welche auf der Höhe ihrer Aufgabe und ihrer Zeit stehen.

(Fortsetzung folgt.)

[Same title (Schluss). *Herold*, Monday, Sept. 27. p. 3, col. 5.]

Wenn der Einsender des Artikels im "Seebote" die Behauptung aufstellt, dass die ihm zu Gesicht gekommenen Pharmacopœn anderer Länder grösstentheils in der Landessprache abgefasst seien, so hat er nur insofern Recht, wenn er von den illegalen, für den tüchtigen Apotheker aber in jenen Ländern nie massgebenden und mit keiner Autorität versehenen Ausgaben spricht. Die officiellen, allein Rechtskraft und Zuverlässigkeit besitzenden Pharmacopœn, so die preussische, hessische, hannoverische, hamburger (jetzt gilt für Ganz-Deutschland die *pharmacopœa germanica*), die russische, dänische, schwedische u. s. w. sind in lateinischer Sprache abgefasst. Auch zwei der hervorragendsten Compendien des Apothekers, *Hager's manuale pharmaceuticum* und Berg's Botanik, sind lateinisch ausgearbeitet.

Wenn Einsender weiss, dass die Nomenclatur der Arznei- und Naturwissenschaft nicht allein dem Lateinischen, sondern auch dem Griechischen entnommen ist, und, sich hierauf stützend, dann auch die Kenntniss der so unendlich schwierigen griechischen Sprache verlangt, sollte er doch auch wissen, dass die meisten der aus dem Griechischen stammenden Worte lateinisirt sind und deshalb in solcher Form nun auch der lateinischen Sprache angehören. Wie es nun nie von Schaden sein kann, recht viel und dies gründlich zu wissen, so wäre sicher auch die Kenntniss des Griechischen für alle Jünger der Naturwissenschaften höchst wünschenswerth, doch stellen sich dem zu grosse Schwierigkeiten entgegen und hat auch die Erlernung der griechischen Sprache lange nicht den Werth für uns, da ausser der neugriechischen keine einzige der modernen Sprachen in so innigem Verhältnisse, ja, überhaupt in einem zu ihr steht (Fremdwörter ausgenommen), wie die modernen romanischen Töchtersprachen zu dem Idiom der alten Römer. Wir trauen dem Einsender doch nicht das tolle Princip zu, dass man entweder alle oder keine der alten Sprachen kennen solle. Mezzopanti oder Knownothing! Mit demselben Rechte, mit welchem unser Unbekannter die Kenntniss des Griechischen neben dem Lateinischen verlangt, könnte er dem Pharmaceuten auch zumuthen, sich im Arabischen unterrichten zu lassen, da viele der Droguen-Bezeichnungen dieser Sprache entstammen, wie z. B. Alkali, Alkohol u. s. w.

Ueberhaupt scheint es Einsender auf die Herren Apotheker besonders abgesehen zu haben, denn er wünscht selbst, dass die alten Sprachen von der amerikanischen Jugend mehr cultivirt würden — nur die Pharmaceuten, jene blossen *famuli* der Aerzte, selbst die tüchtigen, schliesst er von dem Eintritt in den römischen Tempel aus. Also eine neue Sorte von Parias. Manchem Arzte, welcher, wie es hier zu Lande so häufig vorkommt, auch eine Apothke führt, wird es interessant und neu gewesen sein, zu lesen, dass von jetzt an in seiner Persönlichkeit zwei Individuen existiren, der Herr und sein *famulus*, nämlich Herr und Diener in einer Person. Wahrscheinlich zieht dann der letztere ersterem Abends die Stiefel aus. Vielleicht haben auch diese beiden Doppelgänger zweierlei Handschrift, eine schlechte der Arzt, eine gute der Apotheker.

So gerne wir dem Einsender gegenüber unsere heutigen Zeilen mit einer versöhnenden süssen Bemerkung schliessen möchten, so thut es uns doch leid, anstatt mit solchen Süssigkeiten ihm mit bitteren Mandeln aufwarten zu müssen.

Dass unser Disputant im Jahre 1870 in New York in acht verschiedenen Apotheken vergeblich nach dieser Frucht suchen musste, aber erst in der neunten solche, und zwar nur zwei Unzen fand, widerlegt die von anderer Seite gemachte Bemerkung bezüglich der gesetzlich regulirten Verhältnisse der New Yorker Apotheken nicht im mindesten, da im Jahre 1870 die neue pharmaceutische Gewerbeordnung noch gar nicht zu Rechten bestand, sondern erst 1872 eingeführt wurde und einen bedeutenden Umschwung der pharmaceutischen Verhältnisse zur Folge hatte. Also ein einfacher Anachronismus des Herrn Seebote-Einsenders, ein *peccatum in temporis ratione*.

Document 22.

[*Der Seebote,* Monday, Sept. 27, 1875. (p. 4, col. 1.)]

(Eingesandt.)

Im gestrigen "Herold" lässt ein Herr, der sich ungeheuer für die klassische Bildung der Apothekerjünglinge zu interessiren scheint, den Anfang einer gelehrten Abhandlung los, zu der sich jeder das Ende selbst denken kann. Der Refrain der ganzen Geschichte ist der: Für jeden jungen Mann, der Apotheker werden will, ist die Kenntniss der lateinischen Sprache durchaus nothwendig. Das der langen Rede, die schon gedruckt worden ist und die noch gedruckt werden soll, kurzer Sinn. Einsender bleibt bei seiner schon früher geäusserten Ansicht, dass es sehr schön und sehr wünschenswerth wäre, wenn die jungen Leute, die sich dem Apothekerfache widmen wollen, ein bestimmtes Mass klassischer Schulbildung hätten, jedoch die absolute Nothwendigkeit derselben für besagtes Gewerbe kann nicht anerkannt werden. Kinder! Kinder! warum geht ihr denn immer wie die Katze um den heissen Brei? Packt doch die Geschichte bei der Krone an, lasst erst die Aerzte die lateinische Sprache lernen und dann nehmt die Apotheker vor. Vorläufig genüge dies, da der Herold-Einsender noch nicht sein ganzes Herzchen ausgeschüttet hat. Sollte es nothwendig sein, soll der Schluss des gestrigen Eingesandt noch beantwortet werden. Aber nur nicht so viele unnütze Worte machen, immer ganz einfach, klar und deutlich seine Meinung sagen.

Eins soll hier nur noch angeführt werden, was besonders bemerkenswerth ist. Im alten Europa bemühen sich jetzt fast alle Völker, den alten Kastengeist abzuschaffen und hier im jungen freien Amerika schwärmen gerade die, welche drüben die Worte Gewerbefreiheit, persönliche Freiheit, Gleichheit, Brüderlichkeit u. s. w. stets im Munde führten, für Einführung aller möglichen Zwangsregeln mittelst der Gesetzgebung am meisten. Man sollte doch bedenken, dass es jedem freien Bürger freigestellt ist, wo und bei wem er seine Sachen kaufen will, und dass es jedem freien Bürger freigestellt sein und bleiben sollte, was er für sein Geld kaufen will, denn mit demselben Rechte, mit dem jetzt von Einigen die Beschränkung des Verkaufs von Giften verlangt wird, könnte von anderen die Beschränkung des Verkaufs von Gewehren, Messern, Aexten u. s. w. verlangt werden. Man kann sich oder auch Andere mit dem einen gerade so gut wie mit dem anderen gewaltsam in die Ewigkeit befördern.

[*Der Seebote,* Wednesday, Sept. 28, 1875. (p. 4, col. 4.)]

(Eingesandt.)

"Noch etwas über die Bildung junger Pharmaceuten und die lateinische Sprache."

So lautet die Ueberschrift eines in der Sonntags- und Montagsnummer des "Herold" erschienenen Artikels. In dem Artikel sucht der Einsender, seine Ansicht, dass für einen hier in Amerika wirkenden Apotheker die Erlernung der lateinischen Sprache unumgänglich nothwendig sei, zu beweisen. Er unterstützt seinen Beweis mit gelehrt sein wollenden Redensarten, verlegt sich, um seine Abhandlung interessant zu machen, auf Wortkrängeleien, indem er aus dem im "Seebote" am Montag den 20. d. M. erschienenen "Eingesant" einzelne Sätze heraureisst, denen er dann Gedanken unterlegt, die kein vernünftiger Mensch in dem besagten "Eingesandt" finden kann u.s.w. Die Quintessenz des ganzen Artikels besteht jedoch in folgendem Satz: Es ist für jeden jungen Mann, der sich der Pharmacopœ widmet, die Kenntniss der lateinischen Sprache durchaus nothwendig. Vorläufig soll dann diese Behauptung hier zuerst gründlich untersucht werden. Um diese seine ausgesprochene Behauptung zu beweisen, führt der Schreiber des Artikels an, dass die offiziellen, allein Rechtskraft und Zuverlässigkeit besitzenden Pharmacopœen, so die preussische, hessische, hannoversche, hamburger, russische, dänische, schwedische, in lateinischer Sprache abgefasst seien. Nun gesetzt den Fall, der Herr hätte Recht, was in aller Welt gehen den hier in Amerika praktizirenden Apotheker die offiziellen, allein Rechtskraft besitzenden Bücher der genannten Länder an? Was hat hier in Amerika Hessen und Hamburg, Preussen und Russland zu thun oder zu befehlen? Die Pharmacopœ für unser Land, für die Ver. Staaten, ist in englischer Sprache geschrieben, und man sollte doch meinen, dass diese hier massgebender sein sollte und ist, als die von dem Schreiber des "Herold"-Artikels aufgeführten. Woher kommt es überhaupt, dass die in diesem Lande ansässigen Deutschen meistens alle hiesigen Verhältnisse nach preussischem oder russischem Brauch regulirt haben möchten; wenn sie nach genannten Gebräuchen so sehr lüstern sind, warum wanken sie denn nicht wieder nach den Ländern zurück, aus welchen sie vor Jahren ausgewandert sind? Es würde sie gewiss kein Mensch davon abhalten; aber gerade seine Ansichten, die einem in der Jugend in irgend einem anderen Lande eingebläut worden sind, hier in diesem Lande als massgebend für die ganze, aus so verschiedenen Nationalitäten zusammengesetzte Bevölkerung aufzustellen, ist denn doch ein wenig zu anmassend. Kein Eingewanderter, mag er nun Franzose, Engländer, Irländer oder Schwede sein, verfällt auf solche Gedanken, und nur allein der Deutsche möchte es immer so haben wie es bei ihm zu Hause war. Nun, kein Mensch hat etwas dagegen, wenn er, für seine Person, die ihm liebgewordenen Gebräuche beibehält, jedoch sollte er, der Eingewanderte, nicht von seinen Mitbürgern verlangen, dass sie sich dieselbe Sehnsucht nach ausländischen Sitten und Gebräuchen anschaffen sollen, die er besitzt. — Also Herr B....., nicht die ausländischen, angeblich nur in lateinischer Sprache (stimmt doch nicht so ganz) abgefassten Pharmacopœen, sondern die amerikanische, in englischer Sprache abgefasste, ist hier massgebend, und auch vollständig ausreichend; es ist also für einen hiesigen tüchtigen Apotheker die Kenntniss der lateinischen Sprache nicht so durchaus nothwendig, wie der Herr Verfasser des bewussten Artikels sie hinzustellen sich bemüht.

Eben dass die absolute Nothwendigkeit zur Erlernung der lateinischen Sprache für Apotheker dieses Landes nicht vorhanden wäre, das, und auch nur das wurde in dem Eingesandt vom 20. d. M. im "Seebote" behauptet. Wenn sich nun der Herr Herold-Einsender mit wahrhaft heldenmüthigem (?) Eifer für die klassische Bildung der Apotheker in's Geschirr wirft, ist das sehr lobenswerth, erstens aber sollte er in diesem heiligen Eifer doch immer hübsch die Kontrolle über seine Phantasie behalten, und nicht Dinge in dem von ihm kritisirten Schriftstück gelesen haben wollen, die gar nicht darin enthalten sind (die einzelnen, effektmachend sein wollenden Schlagwörter, als da sind Mezzopanti, Know-nothing, Famulus, Parias, bittere und süsse Mandeln, hier zu widerlegen gebricht es uns an Zeit und Lust und wäre die Arbeit auch vollständig überflüssig, eine elende Wortfechterei), zweitens sollte er mit seiner Weisheit nicht erst nach acht Tagen, sondern gleich zum Vorschein kommen (wer wird überhaupt in unserer Zeit des Fortschrittes, wo die Geister, hauptsächlich die eben von Europa importirten, durch die Lektüre der alten Klassiker so gebildet sind, dass sie ihre Muttersprache beherrschen wie ein guter Ritter sein wohldressirtes Ross, so lange auf Antwort warten lassen!) und drittens, offen gestanden, und man soll immer hübsch ehrlich sein, kommt mir die Begeisterung, welche sich da in dem "Herold"-Artikel für die Ausbildung der jungen Pharmacenten in der lateinischen Sprache breit macht, sehr verdächtig vor, ich konnte den Spruch: "es mag wohl Eigennutz, nicht Menschenliebe sein" bei'm Lesen des Artikels nicht mehr aus dem Sinn bekommen. — Zum Schluss empfehlen wir nun noch dem Verfasser des "Herold"-Artikels die aufmerksame Lektüre der betreffenden "Eingesandt" im "Seebote", darin wird er finden, dass der Schreiber derselben das Erlernen der lateinischen Sprache für sehr gut und fruchtbringend, nicht nur für angehende Pharmacenten, sondern auch für andere junge Leute hält, dass er jedoch der Ansicht, ohne Kenntniss der lateinischen Sprache könne kein tüchtiger Apotheker bestehen, nicht beipflichten kann.

(To be continued.)

MONTHLY REVIEW.

Commercial Reports.

Semi-Annual Report of Schimmel & Co. (Fritzsche Bros.), **Leipzig & New York.**

NOVELTIES.

Savory Oil. We have distilled the fresh blooming plant of Summer savory, *Satureja hortensis* L., cultivated upon our experimental plantation at Miltitz. 0.097 per cent. of an oil were obtained which has the sp. gr. of 0.904 and an opt. rot. of + 0° 4′; it requires 9 parts of 80 per cent. alcohol for solution, forming only a turbid solution with 70 per cent. alcohol. The oil contains 38 per cent. of phenol (carvacrol).

The composition of savory oil was ascertained by Jahns[1]; it contains besides carvacrol, phenol, cymol and a terpene not yet examined.

The odor of the oil is pleasantly aromatic. On account of the very small yield its price is too high to admit of distillation on a large scale and of introduction into practical use.

Savory Oil, Mountain. This oil was obtained from the Mountain savory, *Satureja montana* L., also cultivated upon our plantations. The yield of oil was 0.18 per cent.; its sp. gr. is 0.939 and its opt. rot. — 2° 35′. The oil gives a clear solution with 4.5 and more parts of 70 per cent. alcohol and with 1½ and more parts of 80 per cent. alcohol. It contains 65 per cent. of phenol. Its odor is identical with that of common savory oil, and its composition is nearly so. According to Haller's[2] examination, it consists mainly of carvacrol and contains, besides, another phenol having a somewhat higher boiling point, and a terpine.

Balsam Tansy Oil. This oil was distilled from cultivated green and blooming plants of the balsam tansy, *Tanacetum balsamita* L.; 0.064 per cent. of oil was obtained. Its odor is balsamic and agreeable but less characteristic, much recalling that of the oil of common tansy. Its sp. gr. is 0.943, its opt. rot. — 53° 48′ at 16° and its sap. fig. 21. When standing in a cool place, paraffin-like crystals separate at the surface of the oil. It is not soluble in 80 per cent. alcohol but renders a clear solution with 1 to 2 parts by volume of 90 per cent. alcohol; upon a further addition of alcohol, the solution becomes turbid and a white flocculent separation (paraffin?) takes place. The oil distills between 207° and 283°, and the following fractions may be obtained:

1.	from	207°	to 220°.....	10.4 per cent.,
2.	"	220°	" 230°.....	16.8 "
3.	"	230°	" 240°.....	18 "
4.	"	240°	" 250°.....	12.4 "
5.	"	250°	" 283°.....	21.2 "
Remainder.....				21.2 "

Xanthorrhoea gum Oil. The gum-resin of some Australian grass trees (*Aphyllantheae*), especially of *Xanthorrhoea hastilis* R. B. indigenous to New South Wales recently came into use for technical as well as for medical purposes. The yellow grass tree gum, *resina lutea*[3] on distillation yields 0.37 per cent. of a yellow oil of an odor resembling that of styrax. It has the sp. gr. of 0.937 and the opt. rot. of — 3° 14′. When it was saponified by an alcoholic potassa solution, the following factors were found: factor of saponification, 74.3, factor of acidity, 4.9, factor of esters, 69.1. The free acid was separated by shaking the oil with a dilute soda solution, and proved to be cinnamic acid, melting at 133°. When the oil was saponified by an alcoholic potassa solution, quite an amount of cinnamic acid was separated from the lye, for 200 Gm. of oil yielded about 40 Gm. of cinnamic acid, recrystallized from its solution in water.

The saponified oil boils between 145° and 240°. When it is distilled, a first fraction is obtained, boiling at 145° to 150° and having the properties of styrol. When this fraction is acted upon by bromine in a cooled ether-solution, styrolbibromide is obtained in fine crystalline needles, having a melting point between 74° and 75°.

According to a more recent examination of the xanthorrhoea gum by K. Hildebrand[4], it contains, besides cinnamic acid, paracumaric acid, both free and combined with xanthoresinotannol; further, styracine paraoxybenzaldehyde, and probably also small quantities of cinnamic acid phenylpropylic ester and traces of vanillin.

As yet the oil is of no practical use.

Larch-needle Oil. The essential oil of the leaves of the European larch, *Larix europaea* D. C., seems not yet to have been obtained on a commercial scale. The needles on distillation yield only 0.22 per cent. of oil, which has the sp. gr. of 0.878 and a dextrogyre rotation of 0° 22′ at 18°. It is soluble in 5 parts and more of 90 per cent. alcohol; its factor of saponification is 23.3, and after the acetylisation 46.

Granted that the ester of the larch-needle oil is bornyl acetate, as is the case with most coniferous oils, the above figures would indicate 8.1 per cent. of bornyl acetate in the original oil, and of 16.1 after the acetylisation of the oil or, calculated according to the amount of the alcohol contained in the original oil: ester-borneol 6.53 per cent., free borneol 6.14 per cent., total amount of borneol 12.76 per cent.

When the oil is subjected to fractional distillation on a free fire, the following fractions were obtained:

1.	from	160°	to 165°...	30 p. c. Optical rotation +4°15′.
2.	"	165°	" 170°...	24 "
3.	"	170°	" 180°...	16 "
4.	"	180°	" 190°...	8 "
5.	"	190°	" 200°...	4 "
6.	"	200°	" 230°...	9 "
Remainder.....				9 "
				100 p. c.

The oil has a refreshing, pleasant larch-needle fragrance. A considerable drawback to its very desirable use consists in the small yield of oil and the difficulty of obtaining large quantities of the fresh needles.

Botany and Pharmacognosy.

The Origin of Storax.

This balsam is not, as has been believed, a product of the bark of the tree producing it, but originates in the young wood. It is not a physiologically normal secretion, but a pathological product resulting from severe injuries to the bark. The first effect of such lesion

[1] Ber. d. deutsch. chem. Ges. 15 (1882), p. 816.
[2] Comptes rendus 94 (1882), p. 132.
[3] Wiesner. Die Rohstoffe. S. 148.
[4] Arch. d. Pharm. 234 (1896), p. 703.

is the development of schizogenetic glands, which later become modified to confluent lysigenetic lacunæ — a procedure without analogue in the vegetable kingdom. Dr. Josef Moeller, to whom is due this discovery, was able to demonstrate these changes for the genuine oriental storax from fragments of tissue found in the balsam. A histological study of stems of the American species furnishing the sweet gum balsam was made.

His experiments with *Liquidambar styraciflora* L., the sweet gum tree, gave interesting results. Semicircular incisions were made in the bark penetrating into the adjacent young wood. The result of the wound was the complete loosening of the bark from the underlying wood, which died. The elements of this dead wood were filled with a yellow material. The vessels contained thyloses, those more centrally located, uncut included, while the wood layer newly developed after the injury consisted only of cells of pathological parenchyma in which schizogenetic glands were to be observed, which united to form lysigenetic lacunæ, the reservoirs of the newly secreted balsam.

The old, unincised wood showed a completely normal structure, in which balsam receptacles were lacking. [Pharm. Post, 1897, p. 455.]

Constitution of Resins.

In a paper read before the XII International Medical Congress in Moscow, Prof. A. Tschirch summarizes the chief results reached during eight years of study on substances known as resins.

From the first, Tschirch assumed that resins are mixtures and that the first condition for arriving at a better knowledge of them was to separate them by means of indifferent agents into their constituents. Investigation has shown that a great number of resins contain esters of the aromatic acids. For example, Peru balsam, balsam of tolu, Siam benzoin and dragon's blood yield on hydrolysis, benzoic acid (C_6H_5COOH); ammoniacum, salicylic acid $\left(C_6H_4\begin{smallmatrix}OH\ (I)\\COOH\ (II)\end{smallmatrix}\right)$; likewise tolu balsam, balsam of Peru, storax, benzoin, acaroid resin and the resin of aloes yield cinnamic acid ($C_6H_5CH.CH.COOH$); the acaroid resins, para-cumaric acid $\left(C_6H_4\begin{smallmatrix}OH\ (I)\\CH.CH.COOH\ (IV)\end{smallmatrix}\right)$. The resins of many *Umbelliferæ* yield ferulic acid $C_6H_3\begin{smallmatrix}OH\ (I)\\—OCH_3\ (II)\\CH.CH.COOH\ (IV)\end{smallmatrix}$ which is present as ester in asafetida and galbanum and easily goes over into umbellic (Umbellsäure) acid and umbelliferon.

Although the constitution of the acids of the esters characteristic for the resins is determined, the structure of the alcohols of these resin-esters is not understood. They show, however, uniformly reactions which the resins lack. Tschirch calls this class of bodies tannols. Among the tannols certain relations are to be seen of the nature of homologies. The tannol of the yellow acaroid resin has the formula $C_{43}H_{46}O_{10}$, the tannol of the red acaroid resin, $C_{40}H_{40}O_{10}$, giving a difference of $3CH_2$. The tannol of Peru balsam has the formula $C_{18}H_{20}O_5$, the tannol of tolu balsam $C_{17}H_{18}O_5$, the difference CH_2.

The bodies are therefore homologous.

Not less than seven of the tannols contain six carbon atoms in the molecule, or a multiple of six. All have only one hydroxyl.

The further study of the tannols is in prospect.

[Pharm. Post, 1897, p. 455.]

Some Useful Plants of New Guinea.

Among other notes on a collection of plants sent by Missionary Bammler from New Guinea to the Botanical Museum of Berlin some references to the uses to which certain plants are put seem worthy of note.

Among the *Monocotyledones*, a small number are used as remedies.

Kyllingia monocephala Rttb., a wayside grass, furnishes its sap which, mixed with lime, serves as a remedy for ring worm. A like use is made of another species of grass, *Fimbristylis diphylla* Vahl., which grows on the fields and along the road-sides.

Cordyline terminalis Kth., a shrubby plant of wide distribution in that quarter of the globe, occurs in both green and red-leafed forms. The leaves of the latter are used as ornament at dances. The expressed sap of the green-leafed form is supposed to be styptic. It is poured over wounds caused by cutting and bruising.

In Bammler's notes, a number of Dicotyledonous plants are referred to as furnishing remedies.

Fleurya interrupta (L.) Gaud. Before blood-letting, the seat of pain is struck (geschlagen) with this plant. A village weed, 50 cm. in height.

Cæsalpinia Bonducella Flem. The liquid obtained by boiling down the leaves of this climber in water to an extract is given at the first menstruation.

Soulamea amara Lam. The sap expressed from the leaves is an effective remedy against lice. A bush found in rocky places.

Hearnia sapindina F. v. Muell. The leaves of this forest tree are boiled down in water and the tea is given to women in confinement.

Euphorbia serrulata Reinw. The herb boiled in cocoa nut milk is given for catarrh. A field weed.

Excoecaria Agallocha L. The sap expressed from the fresh bark taken from this shrub, mixed with cocoa nut milk (Cocosnusswasser) and drunk is a strong emetic and purgative. Although the plant is decidedly poisonous, the powerful effects ascribed to it heretofore are probably to be regarded as fabulous. It has been related that the sap introduced into the eye causes blindness. From the above, this seems impossible. In breaking up the soil in Kaiser Wilhelmsland, dangerous eye troubles are incurred due to the sap of a *Gluta*. The species was not determined.

Aleurites moluccana (L.) Willd. The seeds of this tree (reaching a height of 25 meters) are edible. An oil is expressed from this which after baths is rubbed into the skin.

Ocimum canum Sims. A weed, one meter high with blue flowers. The freshly expressed sap is inhaled through the nose for catarrh. When boiled, the plant is an abortive.

Morinda citrifolia L. A bush in rocky locations, said to be poisonous; the root is used to color *Tapa* fabric yellow.

[Notizblatt des königl. bot. Gart. u. Mus. zu Berlin. No. 2. 1895, p. 44.]

New Remedies.

Silver Sulphophenylate.

This silver salt, proposed as an antiseptic, was first prepared by Zanardi by the action of phenylsulphonic acid upon silver carbonate. It is sensitive to light.

[Ph. Ztg., 1897, p. 597; from Boll. chim. Farm., 1897, p. 449.]

Phosphoguaiacol.

This is the name given by Ballard to guaiacol phosphite, a white, crystalline, non-caustic powder of a sharp taste and mild odor. The crystals melt at 77.5° and are soluble in water, ether, chloroform, acetone, benzine and the fatty oils. For method of preparation see Ph. Rev. 15, p. 118 under "guaiocol phosphide" (should read guaiacol phosphite).

Benzo-jodhydrin.

Chenal has recommended this compound as a substitute for potassium iodide, claiming as advantages that it never causes iodism and that much smaller quantities are required to produce the same therapeutic effect. Benzo-iodhydrin is prepared by heating benzoyl iodide with epichlorhydrin to 70°. It is crystalline, unctuous to the touch, and soluble in ether, alcohol and chloroform. It is preferably administered made up into granules with sugar. Single dose, corresponding to a gramme of potassium iodide, is 0.13 g., containing 0.05 iodine, 0.014 g. chlorine, 0.05 g. benzoic acid.

[British Medical Journal, 1897; Pharm. Centralh., 1897, p. 372.]

Hydroxyl-free Cod Liver Oil.

Under this name, the firm Peter Möller, Christiania, has placed upon the market a cod liver oil claimed to be free from all oxy-fatty acids, to whose presence the disagreeable belching caused by the ordinary oil is supposed to be due. The manufacture of this new oil is the same as that of the old, except that the process is conducted in an atmosphere of carbon dioxide, thus preventing all action of the atmospheric oxygen upon the readily oxydizable glycerides of jecoleic and therapinic acids. The taste of this new preparation is said to be very mild. To prevent its coming in contact with air, the oil is placed on the market only in well-filled bottles.

[Ph. Centrh., 1897, No. 34; Ph. Ztg., 1897, p. 597.]

Chinopyrine.

Laverau, a French physician, was the first to employ subcutaneously, concentrated solutions of quinine with antipyrine, containing 30 p. c. of quinine and 20 p. c. antipyrine. In no instance did the patient feel the pain always accompanying the injection of either of these substances alone. G. Santesson now employs 50 p. c. solutions of quinine hydrochloride made with antipyrine, under the name of chinopyrine. The quantity of water used in making these solutions is scarcely sufficient to moisten the mixed powders, but upon warming, the mass "melts" and changes to a clear, syrupy, slightly yellow or nearly colorless liquid. This liquid is quite permanent; even upon evaporation no crystals form, but only a varnish-like mass remains. The pure, dry antipyrine in a way acts as a solvent for quinine hydrochloride. When the mixed dry substances are heated together in a test-tube at the temperature of the water-bath, they gradually change into a clear, colorless, tough mass, which does not become crystalline upon cooling. Santesson inclines to the opinion that the change is a chemical one, since the action of chinopyrine differs decidedly from that of its two components. Santesson's clinical observations agree with those of Laverau. In no case did the hypodermic injection of chinopyrine cause pain, inflammation, abscesses, gangrene or like results.

[Ph. Ztg., 1897, p. 623; from D. Med. Wschr., 1897, No. 35.]

Orthoform.

This is the name given by Einhorn and Heinz to p.-amido-m. oxybenzoic acid-methylester, recommended by them as a local anæsthetic in the treatment of wounds. Orthoform is a white, light, voluminous, crystalline powder without odor or taste, only slightly and slowly soluble in water. Upon the latter property its advantage over other anæsthetics is said to depend. Just sufficient substance is dissolved to produce the anæsthesia; on the other hand, solution proceeds so slowly that only small quantities are removed by resorption, so that the action of the drug can extend through several days. With hydrochloric acid, orthoform forms a crystalline salt, readily soluble in water and having an acid reaction. This salt has the same therapeutic effect as orthoform itself, but on account of its acid reaction can not find as extensive application. It should not be applied to sensitive mucous membranes nor used for hypodermic injections. Since orthoform, on account of its slight solubility, produces its analytic effect only wherever it comes in direct contact with the tissues, it is necessary to distribute it as uniformly and thoroughly as possible. It is therefore best applied as a fine powder or rubbed up into a salve (in the case of wounds or tumors). The manufacturers of orthoform are the Höchster Farbwerke.

[Ph. Ztg., 1897, p. 597; from Münch. Med. Wschr., 1897, No. 34.]

Tannalbin.

In his search for a tannin preparation which would be unaffected by the gastric juice, but would liberate tannic acid in the intestines, R. Gottlieb hit upon the compound of tannic acid with albumen, which seems to fulfill all the requirements. To this he gave the name of tannalbin.

G. R. Schmidt has recently developed a method of preparing a compound equal in value to the tannalbin of commerce, but which can be made at a much lesser expense. The process is as follows: 10 p. of a 10 p. c. solution of albumen are mixed with 6.5 p. of a 10 p. c. tannin solution; the resulting precipitate is collected on a strainer, washed well, expressed, and dried at 30°. The mass is then powdered, the powder passed through a fine sieve and after spreading in thin layers, is heated for six hours to 120°. The resulting preparation is identical with the commercial tannalbin. After digesting for 2—3 hours at 37—40° with a 1 p. c. soda solution, 24—40 p. c. remained undissolved. Under the same conditions, using an acid pepsin solution (1 g.

pepsin, 2.5 g. hydrochloric acid, 150 g. water), the undissolved residue amounted to 35—57.5 p. c. The requirements for a good tannalbin are given by Schmidt as follows:

Tannalbin should not be astringent to the taste. After 2—3 hours digestion with artificial gastric juice at 37—40°, less than half should dissolve, while digestion with 1 p. c. soda solution should result in the solution of more than 50 p. c.

[Pharm. Zeit., 1897, p. 538.]

Some New Antipyretics.

These are the p.-phenetidine condensation products with protocatechuic aldehyde, dimethyl protocatechuic aldehyde (methyl vanillin) and opianic acid, respectively (see also vanillin-p.-phenetidine, Ph. Rev. 15, p. 143). These compounds are all prepared by heating p.-phenetidine with the respective substances to 120°. The reactions in the three cases may be expressed:

$$C_6H_3(OH)(CHO) + C_6H_4(OC_2H_5)(NH_2) = H_2O + C_6H_3(OH)(CH:N.C_6H_4.O.C_2H_5)$$

$$C_6H_3(OCH_3)(CHO) + C_6H_4(OC_2H_5)(NH_2) = H_2O + C_6H_3(OCH_3)(CH:N.C_6H_4.O.C_2H_5)$$

$$C_6H_2(OCH_3)(OCH_3)(COOH)(CHO) + C_6H_4(OC_2H_5)(NH_2) = H_2O + C_6H_2(OCH_3)(OCH_3)(COOH)(CH:N.C_6H_4.O.C_2H_5)$$

The protocatechuic aldehyde-p.-phenetidine crystallizes with 2 molecules of water and melts at 220°, undergoing decomposition at that temperature. It is soluble in water and possesses hypnotic as well as antineuralgic and antipyretic properties. Methylvanillin-p.-phenetidine crystallizes from hot water with 2 molecules of water of crystallization, the crystals melting at 210°. Opianic acid-p.-phenetidine is a crystalline powder, melting at 175°, insoluble in water, but readily soluble in the ordinary immiscible solvents. Both of the latter compounds are decided hypnotics as well as antipyretics. The method of manufacture of all three of these condensation products is covered by German patents held by C. Goldschmidt, of Frankfurt a. M.

Literary.

Books and Pamphlets Received.

Deutsche Verlags-Anstalt—Stuttgart. Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen. Mit zahlreichen Abbildungen.
25. Abtheilung: Konsolen–Kuppelungen, pp. 641—800.
26. Abtheilung: Kuppelungen—Linde, pp. 1 bis 160.

*Felix Alcan, Éditeur—Paris. Dictionnaire de Physiologie par Charles Richet, Professor de Physiologie à la Faculté de Médecine de Paris. Troisième fascicule du Tome II, pp. 641—978, avec 36 gravures dans le texte. 1897.

Verlag von Wilhelm Engelmann—Leipzig. Lehrbuch der allgemeinen Chemie. Von Dr. Wilh. Ostwald, Professor an der Universität zu Leipzig. In zwei Bänden. Zweiten Bandes zweiter Theil: Verwandtschaftslehre. Zweite Lieferung, pp. 209—416. 1897. M. 5.00.

—— Die wissenschaftlichen Grundlagen der analytischen Chemie. Elementar dargestellt von W. Ostwald. Zweite vermehrte Auflage. Ein Bd., pp. x, 200. 1897. M. 5.00; geb. M. 5.80.

—— Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten, insbesondere den Nutzpflanzen. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten begründet von A. Engler und K. Prantl, fortgesetzt von A. Engler, ord. Professor d. Botanik und Direktor des botan. Gartens in Berlin. Lieferungen 155—158. Nachtrag und Register zu Theil II–IV. 1897. Subscriptions pro Heft zu zwei Lieferungen M. 3.00. Einzelpreis M. 6.00.

Verlag von Julius Springer—Berlin. Pharmaceutischer Kalender 1898. Mit Notizkalender zum täglichen Gebrauch nebst Hilfsmitteln für die pharmaceutische Praxis. Herausgegeben von Dr. H. Boettger und Dr. B. Fischer. In zwei Theilen.
I. Theil: Kalendarium, Schreib- und Notizkalender, Hilfsmittel für die pharmaceutische Praxis, pp. 190.
II. Theil: Pharmaceutisches Jahrbuch.
Siebenundzwanzigster Jahrgang. 1898. M. 3.

Lea Brothers & Co.—Philadelphia. A textbook of practical therapeutics with especial reference to the application of remedial measures to disease and their employment upon a rational basis. By Hobart Amory Hase, Professor of Therapeutics and Materia Medica in the Jefferson Medical College. Sixth edition, enlarged, thoroughly revised and largely re-written. One vol., pp. 756. 1897. Cloth, $3.75; leather, $4.75.

Verlag von Otto Wigand—Leipzig. Jahresbericht über die Leistungen der chemischen Technologie mit besonderer Berücksichtigung der Elektrochemie und Gewerbestatistik für das Jahr 1896. Bearbeitet von Prof. Dr. Ferdinand Fischer in Göttingen. XLII. oder Neue Folge. XXVII. Jahrgang. Ein Bd., pp. xxxvi, 1244, 1897. M. 24.00.

Otis Clapp & Son, Agents—Boston. Pharmacopœia of the American Institute of Homeopathy. Published for the Committee on Pharmacopœia of the American Institute of Homeopathy. One vol., pp. 674. 1897.

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* This fascicle contains the continuation of the article *cerveau*, which was commenced in fascicle five and which evidently will be completed in the seventh fascicle. The review will, therefore, be postponed until this article is completed.
Ed.

Chemical Publishing Co. — Easton, Pa. Organic Chemistry for the Laboratory. By Dr. W. A. Noyes, Professor of Chemistry in Rose Polytechnic Institute, Terre Haute, Ind. One vol., pp. x, 257.

Author — Cincinnati. Ueber kalifornische Manna. By J. U. Lloyd. Reprint from the Berichte d. d. pharm. Gesellsch. 1897. Pamphlet, pp. 9.

Author — Madison, Wis. North American species of Amblystegium. By Lellen S. Cheney. Reprint from the Botanical Gazette, 1897. Pamphlet, pp. 58.

Author — Atlanta, Ga. Commercial Fertilizers and Chemicals, inspected, analyzed and admitted for sale in the State of Georgia, 1897. By Dr. George F. Payne, State Chemist. Brochure, pp. 116.

Author—Helfenberg. Ueber die Werthbestimmung der Kolanuss und des Kolaextraktes. Vortrag, gehalten vom Verfasser auf der 69. Versammlung Deutscher Naturforscher und Aerzte in Braunschweig, Abth. f. Pharmacie und Pharmacognosie. Von Dr. Karl Dieterich. Sonderabdruck aus d. Pharm. Ztg. 1897, No. 16. Pamphlet, pp. 11.

Reviews.

Incompatibilities in Prescriptions. For students in pharmacy and medicine and practicing pharmacists and physicians. By Edsel A. Ruddiman, Ph. M., M. D., Adjunct Professor of Pharmacy and Materia Medica in Vanderbilt University. First edition. 1 volume, 267 pages, 8vo. John Wiley and Sons, New York, 1897. $2.00.

It is one of the unfortunate results of the present condition of pharmacy in this country that most pharmacists, when confronted by problems new to them, have neither the time nor the library and laboratory facilities for investigating them, and for finding either solutions to the problems or means of circumventing difficulties. Especially is this true at the prescription counter, where often dangerous prescriptions are filled, due to the haste or ignorance of the dispenser, or are refused, where a proper understanding of the conditions would have remedied the trouble.

The book before us serves as an excellent guide and reference book at the prescription desk for those pharmacists whose means will not allow them to secure the larger works in chemistry and therapeutics. Its concise form will also make it very valuable to others who are more fortunate in this respect.

The author has divided his work into two parts, the first containing in alphabetical arrangement many drugs and most of the important chemicals of the materia medica, together with explanations of their incompatibilities, physiological as well as chemical and pharmaceutical. In the case of chemical incompatibilities the products of the decomposition are given whenever known, while the many references given in the text enables the reader to look up further information in the larger works of reference or in the original articles. All the common cases of incompatibility are treated of, but besides these, many of rarer occurrence; that the work has been brought up to date is shown by the large number of new remedies included in the subject matter.

The second part consists of a list of over 300 incompatible prescriptions, intended to give the student of pharmacy or medicine practice in discovering incompatibilities, while the notes which follow serve as answers to his solutions.

The book is printed in clear type on good paper and is remarkably free from typographical errors for a first edition. It should certainly find favor with the medical as well as with the pharmaceutical profession. *Richard Fischer.*

Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten, insbesondere den Nutzpflanzen. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten herausgegeben von A. Engler, Professor der Botanik und Direktor des botanischen Gartens in Berlin. Lief. 155—158. Nachtrag und Register zu Theil II—IV. Bogen 1 bis 12. Verlag von Wilhelm Engelmann in Leipzig. 1897.

At the close of that part of this great work dealing with the flowering plants, the editor finds that since the printing of the various installments composing this section of the work, much has appeared which can not be allowed to go without notice in this publication. During the last ten years, the exploration of hitherto little known regions by students of botany has brought much to light which is important to systematics. This period has likewise brought in with it the increased agitation of the nomenclature question and the putting into operation by many monographers of the principle of priority. This has resulted in the resuscitation of many old generic names and has necessitated some reference to them in a work of this scope. O. Kuntze's Revisio generum plantarum (1891) made a thoroughgoing use of this principle and compelled a consideration. In deciding how far to follow Kuntze's dictum and how far to listen to arguments from convenience contained in the protests from workers in applied botany in its various branches and from others desirous of seeing the names long in use retained, Engler determined to retain those generic names which have been in use for fifty years even though according to the priority principle they should be superseded. This latter name, though a prior one, after being unused for this period, is regarded merely as a synonym. If, however, such a name has been revived and used in a new monographic treatment of a group or in a large systematic work and is used consistently in the description of species, it has been likewise restored in this work.

In these supplementary numbers, the literature that has appeared since the publication of those parts dealing with the various families and genera has been cited and the *Pflanzenfamilien* brought up to the end of the year 1896.

As a result of the most painstaking work, directions for the insertion of this additional matter in its proper connections are given and if one has the patience it is now possible for the reader by using the original text and the supplementary numbers to get an idea of any genus as it was understood to botanists less than a year ago. In spite of some inconvenience necessary to the use of this appendix, it is no small achievement that so large a mass of matter can thus be

brought up to date. It is in another direction of no small interest to be able to see thus set apart the achievements of a decade of study in systematic botany.

Dr. Engler has included in this supplement the chapter from his "Syllabus der Vorlesungen etc." on the principle of systematic arrangement of plants, especially of the Augiosperms. This statement of principles by the author of this work will make clear the reasons determining many points of arrangement by giving the reader the key to the situation.

It is out of the question to go into detail concerning the matter here inserted. Spermatozoids in *Ginkgo* leads to the establishment of a new family, the *Ginkgoaceæ*, distinguished by the presence of these bodies. Chalazogamy and Guignard's centrospheres in the reproductive apparatus of plants are discussed and illustrated. Thus by the frequent emendations and additions contained in the numbers at hand, the families up to the *Leguminosæ* are brought up to the present state of our knowledge.

As this work draws near to its completion, the magnitude of the undertaking becomes plainer and the service rendered to botany becomes better appreciated. *Rodney H. True.*

Vorlesungen über Bakterien von Dr. Alfred Fischer, a. o. Prof. der Botanik in Leipzig. Ein Bd., pp. ——. Mit 29 Abbildungen. Verlag von Gustav Fischer in Jena. 1897. M. 4.00.

A new book on bacteriology written from the usual standpoint demands nowadays a good reason for its existence. Bacteriology in its usual aspects has been so well and so thoroughly treated that aside from new material added there is not much justification for the rapid multiplication of manuals that is in vogue at the present time.

Such justification is found in the present instance in the broad philosophical attitude in which Fischer approaches his subject. The average text book on bacteriology considers the subject as entirely within the limits of medicine, and does not regard the recent advance in other realms of research of sufficient importance to merit more than a casual mention, if indeed that scant courtesy is given. No objection could be made to this if these manuals purported to treat of purely medical bacteriology, but in the general text book it would seem as if other lines of bacteriology should receive fuller treatment.

Fischer's new work, Vorlesungen über Bakterien, indicates that he considers his subject of sufficient importance to treat it in a broader manner than this. Not only does he include in his consideration a full treatment of the subject physiologically, but he adds to this an exposition of the comparative physiology of related functions in other groups of plant life.

Considerable attention is given the fermentative processes, not only in their chemical and scientific relations, but also in their practical applications as well. The rôle that bacteria play in the cyclical changes that matter undergoes in nature is well presented, but not all bacteriologists will accede to his conception of fermentation as limited to the decomposition processes that only occur among the carbohydrates.

The exposition here presented is thoroughly up-to-date. One sees for the first time in a text book the new theory in regard to the action of chemical disinfectants and their relation to electrolytic dissociation.

A leading and a valuable feature of the book is found in the admirably chosen list of bibliographical references with which the volume ends. The volume can be heartily recommended to students of this science who desire to keep in touch with the latest advances that are being made, and who also look upon the science of bacteriology as a science instead of a secondary adjunct to some other line of thought. *H. L. Russell.*

Lehrbuch der allgemeinen Chemie von Dr. Wilh. Ostwald, Professor an der Universität zu Leipzig. In zwei Bänden. Zweiten Bandes zweiter Theil: Verwandtschaftslehre. Zweite Lieferung. pp. 209—416. Verlag von Wilhelm Engelmann, Leipzig. 1897. M. 5.00.

The first Lieferung of part two of this volume was reviewed on p. 60 of this journal. According to an announcement by the publisher, the third fascicle is to appear at the close of this and the fourth and last fascicle in the course of next year. With it the discussion of the theory of affinity will be completed. Like the other parts of the work, part two of volume two is subdivided into books and these into chapters. The first fascicle was taken up almost completely by Book one, which treated of the history of this interesting theory from its crude inception to its modern mathematico-physico-chemical stage in the course of its evolution. Book two occupied a few pages in the first fascicle and runs through the second one recently issued, but does not come to an end on the last page of this fascicle. The first chapter treats of chemical kinetics and the second of chemical equilibrium.

Like everything that happens in nature, so every chemical process requires time to take place. This may be but the fraction of a second, or years, or even œons, according to the nature of the substances that act on each other, the medium in which the reaction takes place, the quantity of the substances in the unit of volume and finally according to the temperature. The laws according to which chemical reactions take place, have been studied in proper connection only at a comparatively recent date, although isolated attempts to study these laws have been made even in the last century. The author, after a brief introduction, takes up the results of individual workers in this field and discusses them in the detailed and thorough manner characteristic of his treatise. The consequence is that the treatise at times little resembles other treatises on chemistry, but rather has an appearance as though journal articles were liberally abstracted and the pieces more or less cemented together.

Chemical motion, however, does not take place in one direction only. Cases are known in which counter reactions take place, i. e. in which the initial substances can again be reproduced from the product resulting from the reaction. These were first regarded as exceptions, then the number of such instances has increased to such an extent that this state of affairs is now regarded as the rule. We have thus the theory of chemical equilibrium, the discussion of which is taken up in the second chapter which, however, does not come to an end with this fascicle. Even to those who do not

possess a sufficient knowledge of mathematics to follow the author through all of his discussions, the book affords a mass of instructive reading matter. *E. K.*

Pharmaceutischer Kalender 1898. Mit Notizkalender zum täglichen Gebrauch nebst Hilfsmitteln für die pharmaceutische Praxis. Herausgegeben von Dr. H. Boettger und Dr. B. Fischer.

I. Theil. Kalendarium, Schreib- und Notizkalender, Hilfsmittel für die pharmaceutische Praxis. pp. 194.

II. Theil. Pharmaceutisches Jahrbuch. pp. CLIII, 181.

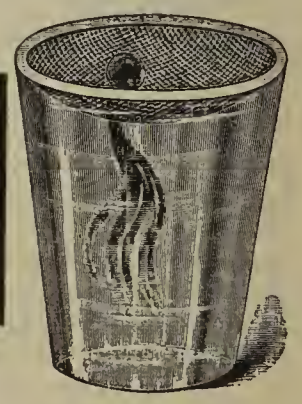
Siebenundzwanzigster Jahrgang (XXXVIII. Jahrg. d. Pharm. Kalenders f. Norddeutschland). Verlag von Julius Springer, Berlin. 1898.

To those who have used the Pharmaceutischer Kalender in past years this annual needs no introduction. To those who have not known the convenience of such a book, the detailed title above will give some notion at least of the character and purposes of the two small volumes. Besides the diary portion of part one, it contains as usual a) Aids for the prescription counter, principally in the way of tables of detailed information with which it were useless to attempt to burden the memory; and b) Aids for the laboratory, also consisting largely of detailed information tabulated in the customary manner. This part, however, contains several additions to which attention should be called: 1) The most important methods of physiologic and hygienic analysis, such as the examination of woman's milk, of the contents of the stomach, of urine, of blood, and of sputum. 2) The principal methods of bacteriological examination. 3) The more common reagents used in physiological and bacteriological examinations. 4) The principal methods for the examination of foods and beverages. These additions will, no doubt, be greatly appreciated by those who have known the value of these manuals heretofore.

The bulk of Part II is of less interest to the American pharmacist, since most of the information contained therein, such as the pharmaceutical laws of the German empire, the pharmaceutical directory of the various states and provinces, etc., is specifically German. Incidentally even this information may be of value to American pharmacists who are interested in questions of pharmaceutical legislation. The introductory part, however, of this volume is scientific and therefore its interest is in no way restricted to graphical boundaries. Last year the Pharmaceutisches Jahrbuch contained an article by Dr. B. Fischer "On the central water supply of villages, institutions and individual buildings." This year's Yearbook contains a supplementary article by Dr. C. Mez on "How to judge waste-waters and how the waste-waters of cities and factories can be removed and purified." These articles are certainly timely and of considerable moment to the educated pharmacist who occupies more or less the position of a sanitary adviser, especially in smaller cities and villages. As long as America does not produce anything similar, these books will continue to be of annual interest to our pharmacists. *E. K.*

Time Contradicts a Mis=Statement.

RECENTLY the manufactnrer of a PATENTED pill attempted to prove that mass pills "dry out" and "harden" with "age", and suggests that the Profession purchase hammers and blocks of wood to see how "hard" they (the pills they use) are. There is no statement why the use of WATER is not suggested to test the solubility of the pill. Thirty years ago we had made a mahogany case, velvet lined, and placed in it a number of bottles of different pills, (each bottle containing 100 pills). They were exhibited at different conventions, and last at the American Medical Convention, June 1–4, 1897. We have just completed a comparative test of fresh friable pills and mass pills (Warner & Co. above referred to) *30 years old*, and the mass pills are found to disintegrate first. We do not see how a pill can evaporate its moisture and become hard when it is first covered with sugar (or gelatin) and packed in glass bottles, securely corked. These pills, 30 years old were *not* "hard and dry". Upon breaking the coating the mass was in excellent condition, and after disintegrating, gave a solution devoid of small particles of the pill as was the case with the friable pill. These particles of the friable pills stay in the water indefinitely and do not break up, even when agitated



IF IT'S A PILL MADE BY W.R.WARNER & CO. IT'S SOLUBLE

We have yet to find a friable pill (Blaud) which gives the light greenish solution, indicative of the ferrous carbonate. Thus far our experiments have demonstrated them to consists of ferric oxide, a form of iron worthless in the conditions where a ferrous carbonate would be of great value.

We have always made a soluble pill. We have countless testimonials to this effect from Practitioners throughout the world, covering a period of 40 years. Dr. J. H. Adair, of Liberty, Ohio, writes us unsolicited, that he recently used some of our pills which he has had for 12 years, and that "they are as efficient as when made."

In the award granted by the Columbian Exposition, 1893, the following language is used:—"The pills are of uniform size, the coating is perfect and protects the pills indefinitely, samples 27 years old being shown readily soluble in hot or cold water."

WILLIAM R. WARNER & CO.

1228 Market Street, Philadelphia.
52 Maiden Lane, New York.
197 Randolph Street, Cnicago.

SUPPLEMENT, JANUARY 1897.

Universities and Colleges.

Brussels Botanical Garden.

During several years past a collection of plants of the Congo district has been made and the specimens have been examined scientifically and classified. The botanist of the garden, M. Durand, has now published a list of plants from this territory which have not been described previously.

University of Wisconsin.

In addition to the required curriculum the School of Pharmacy offers two courses of special lectures of interest to the pharmaceutical student. A course on First aid to the injured with demonstrations is being given by Dr. L. R. Head. This will be followed next semester by a course on Law applied to pharmacy by Prof. C. N. Gregory, Associate Dean of the College of Law.

University of Arizona.

According to the Botanical Gazette a noticeable Cactus Garden has been established at the University of Arizona. It is the purpose to bring together eventually all the *Cactaceæ* indigenous to the United States, and already more than a hundred species are represented. The region could not be more favorable for such a purpose, and for the first time there will be large opportunity for studying the group in its natural environment.

The Burroughs Scholarship.

The Burroughs Scholarship is offered annually in July to pharmaceutical chemists who are desirous of obtaining advanced instruction in chemistry and pharmacy with a view of conducting original investigations in these subjects. The scholar receives the sum of 26 l. and is provided, free of cost, with a working-bench, apparatus and materials in the Research Laboratory. He is required to work under the supervision of the professor of chemistry.

California College of Pharmacy.

The trustees and faculty decided to change the term of the sessions from summer to winter. The summer term was adapted in 1873 principally because the trade in San Francisco is lightest in summer, thus enabling students to attend college while working in the stores; also because the season was considered better for the study of botany. The next term will open on the first of February, but thereafter the term will begin with the first of November.

University of Munich.

Attention is called to the fact that the relationship between the pharmaceutical institute under Prof. Hilger and the chemical institute under Prof. v. Bayer enables the pharmaceutical student to receive his introduction into chemistry under the professor of general chemistry and the instruction in pharm. chemistry by Prof. Hilger. It is said that no other German university has had such a division of labor and that the arrangement redounds to the credit of the government and university authorities. It may not be amiss to call attention to the fact that at least one American university has for some years had a similar if not the same arrangement.

An American Tropical Botanical Laboratory.

"In order to come in contact with the problems that are now pressing, the botanist must establish his laboratory in the midst of the normal conditions, and no condition is so vitally needed by botanical research, and so overwhelmingly lacking, as that furnished by the tropics. In consequence of this, the garden and the laboratories at Buitenzorg already have furnished opportunities for many important discoveries, and have become a sort of Mecca to the botanists of the world. But to an American botanist Java is a hemisphere away, and a visit to Buitenzorg is equal to a trip around the globe. A month is necessary for the journey each way, and the cost of it, including but a brief stay at the laboratory, is about twelve hundred dollars."

The editors of the Botanical Gazette as well as other botanists are therefore anxious to have a botanical laboratory established in the American tropics. Not only would a visit to such a laboratory require much less time and money, but at our very door there lies a vast domain practically unknown. It is estimated that a trial station might be maintained either on the eastern coast of Mexico or on one of the islands of the Carribbean Sea for the cost of $5000 for one year. After that the selection for a permanent station could be made. It is expected that cooperation of the different universities as well as private subscriptions will soon effect the realization of these plans.

Division of Botany, Dept. of Agriculture.

From a letter to the Botanical Gazette by Mr. F. V. Coville the following is noted as being of interest to the pharmacist. The Division of Botany, Dept. of Agriculture, has at present a force of twenty persons including clerks and laborers, and funds for expenditure amounting to $29,000 annually. The work of the Division includes investigations and statistics on native plant resources; geographical distribution of seeds; weeds; distribution damage and methods of checking; poisonous plants; anatomy. Mr. Coville is chief of the Division and Botanist. The work in pharmacology is in charge of Mr. V. K. Chestnut who is provided with laboratory facilities for his work and who is conducting experiments on poisonous plants, especially the native ones which are a common cause of poisoning in man or domestic animals.

The National Herbarium grew up under the control of the Division of Botany, but several years ago it became so extensive that the Division could no longer give it the care and protection it demanded. The responsibility for its care and housing has therefore recently been transferred to the Smithsonian Institution where it is now located. The botanist of the Division of Botany, Mr. Coville, serves without pay as curator. In addition to his services the herbarium is provided with the services of ten persons including three assistant curators. In its fire proof home the herbarium is now favorably located to continue its development.

Scientific Societies.

German Chemical Society.

This society intends to erect a monument in honor of the late Prof. August Kekulé. The monument is to be placed in front of the chemical institute in Bonn.

Pan-American Medical Congress.

The second Pan-American Medical Congress met in the City of Mexico, Nov. 16. The congress was presided over by Exprovost Pepper of the University of Pennsylvania. Pharmacy of this country was represented in two sections. Prof. Joseph P. Remington presided over the section on The Pan-American Pharmacopœia and Prof. Rusby over the section on South American Flora.

Belgian Pharmaceutical Society.

At its October meeting the Association Générale Pharmaceutique has determined to celebrate its fiftieth anniversary by arranging an international pharmaceutical congress.

Proceedings received:—

Zeitschrift für Naturwissenschaften, Organ des naturwissenschaftlichen Vereins für Sachsen und Thüringen. 69. Bd., 3./4. Heft. Herausgegeben von Dr. G. Brandes. Verlag von C. E. M. Pfeffer, Leipzig.

Proceedings of the Wisconsin Pharmaceutical Association. Sixteenth Annual Meeting, 1896. Together with the fourteenth annual report of the Wisconsin State Board of Pharmacy. Brochure, pp. 78 and 64.

In Memoriam.

Du Bois-Reymond.

The news of the death of the famous Berlin professor has just been received. Emil Heinrich Du Bois-Reymond was born in Berlin November 7, 1818. In 1837 he began the study of philosophy and theology, but soon went over to the study of the natural sciences. He studied geology in Bonn in 1838, then physics and mathematics in Berlin, and in 1839 took up the study of medicine. Later, as a member of the Berlin faculty, he developed the large and world famed physiological institute. As secretary of the Academy and as rector of the University he had frequent occasions to deliver public lectures, through which he became popularly so well known.

Personals.

Prof. Max v. Pettenkofer has been reappointed president of the Bavarian Academy of Sciences for three years by the Prince-Regent. Not long ago he resigned from the office of kgl. Leib- and Hofapotheker after having previously given up his professorship in hygiene at the university. Pettenkofer held the office of Hofapotheker since 1850, having inherited it, as it were, from his uncle. This was possible because he had passed the state board examination in pharmacy as well as in medicine.

Prof. Robert Koch has left Berlin on a leave of absence to investigate the Rinderpest in South Africa at the invitation of the Cape Colony Government. While in England, on his way to Africa, his reception is said to have been exceedingly cool, which has not at all pleased the Germans.

In recognition of the long services for pharmaceutical education the former pupils of Prof. Attfield intend to honor their teacher with a testimonial of their appreciation. A committee has been formed to receive subscriptions.

Bibliography.

Volume three of Principles and Practice of Agricultural Analysis, by H. W. Wiley and published by the Chemical Publishing Co. is now ready.

During the coming year the Berichte of the German Chemical Society will contain only the original contributions and the proceedings of the society. As announced more than half a year ago the volume of abstracts will be combined with the Chemisches Centralblatt. Americans will hereafter receive the Berichte for M. 25.00. The first semester of the Centralblatt can be had for M. 14.00. It is hoped that the number of subscribers to the Centralblatt will be sufficiently large to allow a reduction in price for the second half year.

The second half of the German translation of the monumental work by Icilio Guareschi on nitrogenous organic substances with special reference to alkaloids and ptomaïnes is complete in manuscript and will be published by Hermann Heyfelder early this year. The German edition is by Dr. Hermann Kunz-Krause of the University of Lausanne.

The second part of the second volume of the revised second edition of Ostwald's Lehrbuch der allgemeinen Chemie is to appear in the course of this year as announced by Wm. Engelmann of Leipzig. The "Schlusslieferung" of Griesbach's Physikalisch-chemische Propædeutik by the same publisher is to appear early this year.

The Torrey Botanical Club offers a complete set of five volumes of its memoirs at half price. The money thus obtained is to be used for reprinting those numbers of the Bulletin which are out of print and for which there has been considerable demand.

Catalogues received:—

A. Hartleben—Wien. Illustrirter Katalog.

Martin Boas—Berlin. Katalog No. 29 des Med. Antiquariats.

Jacques Lechevalier—Paris. Catalogue trimestriel de livres anciens et modernes: Botanique.

J.—B. Baillière et Fils—Paris. Botanique.

Commercial.

The publications by Prof. Maragliano which have appeared in a number of medical journals of Europe have created considerable interest in his treatment of pulmonary tuberculosis. The New York Medical Journal of August 15th, in a lengthy editorial, comments favorably on Maragliano's serum treatment.

Maragliano's serum is now undergoing clinical tests in a number of our institutions. First supplies of the remedy have come into the hands of Messrs. Lehn & Fink, 128 William St., New York City, who supply it in original vials containing 5 ccm.

The quantity of mercury exported by the mines of the firm of Auerbach & Co. at Nikotooka, in the government of Ekatcrinoslav, in the course of the last year amounted to 10,706 bottles, which went to various European countries, China, India, and to the Transvaal. For consumption in Russia itself 1,596 bottles were sold. The output is said to be steadily increasing.

The English chamber of commerce in Alexandria has urged the adoption of the metric system of weights and measures by Egypt. The reason for this petition lies in the conviction that British commerce would profit greatly by such a step, because the natives cannot understand the tenacity with which Great Britain clings to its antiquated systems. Egyptian merchants shun transactions with the English merchant because of the inconvenience of conversion of weights and measures, whenever competitors use the more convenient decimal system.

The Bulletin Commercial states that, according to American statistics, the production of caoutchouc in the province of Para (Brazil), which is constantly on the increase, has doubled in the last twelve years and quintupled in the last thirty years. The production of 1895 was 13.4 percent greater than that of 1894, and 10.2 percent greater than that of 1893. The following statement shows the value of the exports in certain years:—

Years.	Value.
1865	£ 8,243,000
1870	10,528,000
1875	15,144,000
1880	18,889,000
1885	29,310,000
1890	36,300,000
1895	46,363,000

The imports of caoutchouc into the United States have increased in about the same proportion as the exports from Brazil, but in 1895, for the first time, the amount of caoutchouc sent from Para to Europe was greater than that sent to the United States. The increase is especially noticeable in England, France and Germany where this product is in great demand.

Untaxed Alcohol for the Manufactures and Arts.

The joint select committee, created at the last session of congress, to investigate and report upon the question of the use of alcohol free of tax in the manufactures and arts, have prepared a series of interrogatories, which will be distributed throughout the country to such parties as are thought to be interested in the question.

The report of Mr. Henry Dalley, Jr., who was commissioned to investigate the workings of foreign laws governing the use of untaxed alcohol in the manufactures and arts has been submitted, and contains very full and extremely valuable data covering Great Britain, Germany, France, Belgium and Switzerland.

It is the earnest desire of the committee to secure all possible information bearing upon the subject, and it is hoped that parties interested will submit their views to the committee promptly. Sets of the circular letter and blank for replies will be supplied to any applicant by addressing the chairman, Room 21, Senate Annex, Washington, D. C.

The committee, which is composed of three members of each House, intended to assemble in Washington soon after the middle of November for the purpose of formulating a report to congress accompanied by the draft of a law which will place domestic industries on as favorable a basis as similar industries in foreign countries. During their sessions in Washington hearings will probably be given in order to supplement the information obtained through the interrogatories above set forth. Due notice of the time of such hearings will be given to the public.

Cultivation of Ipecacuanha in Straits Settlements.

In Mr. Cantley's Report on the Forest Department of the Straits Settlements for 1886 (quoted in the *Kew Bulletin*, 1888, p. 127—128) it is stated that "ipecacuanha seems to grow in the Straits with all the luxuriance of its native country. I visited," says Mr. Cantley, "a plantation in Johore and saw thousands of plants in excellent health. They were protected from the sun by palm leaves laid side by side on artificial supports about six feet high; hedges of the same were put down a few yards apart." It is possible that this plantation was the source of ipecacuanha which found its way into the London market at the latter end of 1887. This was, according to the *Kew Bulletin*, the first commercial sample of the drug produced in the Old World. A report upon its examination was given by Mr. Francis Ransom in the *Pharmaceutical Journal*, 1887, p. 400. It was stated that this cultivated article was "quite equal to the average Brazilian roots." Since that time very little has been heard of this interesting cultivation. We find, however, that it is still in existence, for Mr. H. N. Ridley, Director of the Gardens and Forest Department in the Straits Settlements makes the following mention of it in his Agricultural Bulletin (No. 4, 1895). "The ipecacuanha of the Renquang estate appears to maintain its high reputation if we may judge by the home market reports, where good quality of Cartagena was at 4 s. 6 d. per lb. and fair stout Brazilian at 5 s. 9 d., the owner refused 6 s. per lb. for the Johore root." [Pharm. Journ. Nov. 7, 1896, p. 408.]

A New False Kola.

There has lately appeared in the London and Liverpool markets a false kola which has proved somewhat difficult to locate botanically. The so-called kola is in a perfectly dried and hard state. Some pieces are of a dull, dark brown and others are of a reddish-brown color. The smaller pieces appear to have been cut across when fresh and to have shrunk in the process of drying; this when mixed with the cotyledons of the true kola would be scarcely distinct enough to be detected, but in the parcels are some entire seeds which measure about 3 in. long, 2 in. wide, and 1½ in. thick. They are oval in shape, and are much contracted in the center at the point where the hilum is

situated, so that the ends being brought together, the point of attachment to the pod is completely hidden. The seed cuts with a firm texture, it has no smell, little or no taste. It is easily divided into two cotyledons and its general character is leguminous. In its shape it agrees very closely with that of the mora—*Dimorphandra Mora*, better known, perhaps, as *Mora excelsa*—a large timber-tree of British Guiana, growing to some 100 to 150 feet high, with a trunk diameter of 2 to 2½ feet. The tree is valued in British Guiana for its durable, hard wood, and the large seeds are eaten by the natives in times of scarcity; they are also used in diarrhoea and dysentery. The seeds of the mora and the large seeds now known as false kola are no doubt closely allied, if not actually identical. The mora has a single-seeded pod, and the appearance of the new seed is that of a single occupant of the outer coatings. That this character is without variation, however, seems doubtful. The species of *Dimorphandra* are mostly natives of Brazil, and it is possible that the seed now in question may belong to one which is not known in this country (England). It may be worth mentioning that the largest seed known in the vegetable kingdom is that of *Dimorphandra oleifera*, one specimen measuring 14 in. in circumference and 6 in. at its greatest width. This comes from Panama and contains oil which is said to be better than linseed oil for mixing with paint, for which purpose it is used in Panama.

[Chemist and Druggist, 49, p. 826.]

Spearmint Oil.

All interest seems to have been lost in Thuringia in the destillation of this oil; the production of this year will hardly amount to more than a few hundred kilos. The world's markets are supplied by North America and especially by the states of New York and Michigan, where the cultivation of spearmint is carried on side by side with that of peppermint. The average production per year is estimated at 12,000 lbs. This year's yield of oil is said to be a normal one so that the prices will remain unchanged.

Our New York Laboratory reports as follows:

"The spearmint plants cultivated in the immediate neighborhood of our Garfield establishment were of excellent growth and were distilled as soon as the flowers appeared. We obtained 0.3 p. c. of oil from the fresh plants. Its specific gravity is 0.980, being considerably higher than that of the ordinary oils of commerce (0.920—0.940); the optical rotation is —42° 32′. The flavor of the oil differs entirely from that of the commercial oils and is not at all like that of mint or pennyroyal, but rather like that of carvol. We observed, by the way, that when the oil separates from the water at the distillation, a considerable quantity of oil heavier than water is obtained. Perhaps this part of the essential oil is, for want of proper care, not collected along with the lighter oil in the distillation and this fact may account for the low specific gravity of most commercial spearmint oils."

[Ber. Schimmel & Co., Oct. '96.]

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SUPPLEMENT, FEBRUARY 1897.

Educational and Scientific Institutions.

New York Botanical Garden.

Number two of the Bull. of the N. Y. Bot. Garden has made its appearance. This number contains reports on the plans of the garden, museums, etc., also a large map which conveys to the reader something of the extent and manifold character of the new garden. Throughout the country the progress of this garden will be watched with interest.

Hungarian Universities.

The Hungarian Apothecaries Society has petitioned the minister of instruction to establish professorships in "pharmaceutical technique" or "practical pharmacy" at the Hungarian universities.

Attention is called to the fact that even under the most favorable circumstances the pharmaceutical apprenticeship is defective even in this particular and that at present the Hungarian like the German universities give no attention to this subject although the state boards demand a practical examination.

Pasteur Institute.

It is reported that the widow of Baron Maurice Hirsch, of Vienna, has resolved to present two million francs to the Pasteur Institute as a memorial of her husband. This will enable the building to be enlarged by chemical and biological laboratories, which, it is estimated will cost about 800,000 francs. Some of the professors, moreover, at present receive little or no salary. The gift, therefore, comes at a very appropriate time, and it could not have been bestowed upon a worthier object, nor could a better memorial be found, than the Pasteur Institute.

University of Bonn.

Dr. Theodore Curtius, Prof. of Chemistry of Kiel, is to succeed Kekulé at Bonn. Curtius was born at Duisburg in 1857. He studied at Leipzig under Kolbe and at Heidelberg under Bunsen, taking his doctor's degree in 1882. He then became assistant to Baeyer at Munich, private docent at Erlangen in 1886 and professor at Kiel in 1889. Curtius is chiefly known by his researches on the diazo and diazoamido compounds of the fatty series, which led first to the discovery of diazoacetic acid and subsequently to the production of hydrazine. The discovery of hydrazoic or hydronitric acid, N_3H, was another result of Curtius' researches which exited very general interest among chemists.

Davy-Faraday Research Laboratory.

On Tuesday, Dec. 22, the Prince of Wales opened the Research Laboratory which has been founded in connection with the Royal Institution, Albemarle Str., London, W., by Dr. Ludwig Mond, who according to the C. & D. has spent 100.000 l. upon the gift, 62,000 l. of which has been invested as an endowment. The house provides sixteen rooms for working purposes, a number of which have been illustrated and described in a recent number of the Pharmaceutical Journal. As previously announced (vol. 14, p. 33), Lord Rayleigh and Prof. Dewar are to act as directors without emolument and Dr. Scott will act as superintendent. In his address Dr. Mond referred to the foundation of the Royal College of Science by the Prince Consort, which was the first part of a scheme, the second of which was to be one of research. It was intended that the whole should be attached to the Royal Institution, but that was found to be impossible. Some years after Dr. Mond had resolved to found such a research laboratory as the present one he ascertained the above facts, and he determined to make it in every way worthy of the illustrious men after whom it was named, and to meet in some measure the intentions of the Prince Consort.

A Department of Science.

Few persons have any idea of the extent and importance of the work the government is doing for the development of the resources of the country and the promotion of its industries. In an article in Science for Jan. 15, Charles W. Dabney, Jr., assistant secretary of agriculture, publishes a summary argument for its consolidation into one department. He shows that, omitting all those charged with purely executive business, the government schools, and the testing laboratories of the War and Navy departments, the United States maintains twenty-eight scientific bureaus for developing our resources and advancing industry, at a cost of nearly $8,000,000 annually. They employ over 5,000 persons, in the entire country.

These bureaus are engaged in doing all kinds of scientific work, from determining the movements of the heavenly bodies to studying insects and bacteria. There are bureaus for studying the earth and its products, the atmosphere and its changes, economic plants and their culture, domestic animals and their kind. There are surveys for measuring the land of the country and sounding its waters; bureaus for investigating many economic problems, and statistical agencies for collecting, compiling, and discussing the results of many industries. There are agricultural experiment stations for developing the products of the land, and a Fish commission for increasing and improving the life of our waters. Other bureaus teach us how to protect our forests, or how to save the forage resources of our Western plains; still others promote fruit culture or teach the farmer how to protect their crops and fruits from injurious insects or disease. Finally, the nation possesses great museums for collecting, preserving and exhibiting all objects of art, ethnology, natural history, mineralogy, geology, the resources of our country and the products of our people's work.

The government has, for an example, three separate and distinct agencies for measuring the land of the country, connected with two different departments; four seperate hydrographic offices for sounding the waters of bays, rivers, lakes, etc., in four different departments; and five separate chemical laboratories in the city of Washington alone. The statistics of the natural resources and products of the country are

collected by eight different agencies connected with six different departments and bureaus, not counting the Census, which usually goes over the whole field again. This is doubtless one reason why government statistics are so often discredited by business men.

Mr. Dabney like most scientists thinks that what is needed is a general coördination of the scientific work of the government, and that the only way to accomplish this is by first bringing all of these bureaus together under one executive head. When this has been done the reorganization would take place naturally and easily, without injury to any of the good work now going on.

British Examinations.

Commenting on the English examinations the Pharmaceutical Journal makes the following statement: "The Major examination reports, published this week, are decidedly discouraging, even if contrasted only with the poor average that has prevailed generally of late years. Thus the percentages of rejections for the past three years have been: — 1894, 49 66; 1895, 53.42; and 1896, 53.07, these figures being higher than might reasonably be looked for among persons who have passed through such a severe ordeal as the Minor examination now undoubtedly is. On the present occasion, however, the percentage of rejections at the Major examinations have reached 57.14, a figure which cannot be viewed with equanimity by anyone having the best interests of British pharmacy at heart. These things are managed much better on the continent, where the percentage of failures does not exceed 5.0 p. c., if it reaches that figure, and the only inference that can be drawn is that there must be a grave defect in the British system — either of education or examination. Perhaps, on the whole, it is safe to say that our examination standard appears to be far above the head of the average candidate, and there is little reason to doubt that the cause is defective education and a consequent unfitness for the position the pharmacist of to-day may reasonably expect to occupy."

Scientific Societies.

German Pharmaceutical Society.

The German Pharmaceutical Society, which is not to be identified with the German Apothecaries Society, has completed its sixth year. Whereas the latter gives its time primarily to professional and commercial questions, the former is strictly a scientific society. For this reason it is naturally more limited in its numbers, but its membership, not confined to Germany, has reached four hundred and twenty. Besides holding regular sessions in Berlin the society publishes its proceedings, the Berichte d. d. pharm. Gesellsch., and during the past year has also started a pharmacognostical central station with which is coupled the publication known as the Bericht über die pharmakognostische Literatur aller Länder. In every respect the society may be said to be in a flourishing condition. Dr. Thoms of the University of Berlin, the president since the organization of the society, declined reelection and Mr. Finzelberg, the former vice-president, was elected in his place. Dr. P. Siedler was reelected secretary.

Personals.

Prof. Charles F. Chandler has retired from the professsorhip of chemistry and medical jurisprudence in the College of Physicians and Surgeons, but retains the professorship of chemistry in Columbia University.

After persistent endeavors of the friends of Charles Ledger, the discoverer of *Calisaya Ledgeriana*, have at last succeded in obtaining a pension from the Dutch government for this aged pioneer.

Prof. Paul Jacobson, known best as joint author with Prof. Victor Meyer of a textbook of organic chemistry, has left Heidelberg and is about to habilitate at the University of Berlin. His election to the position of General Secretary of the German Chemical Society has made necessary this change of residence.

Dr. C. A. Chatin, the new President of the French Academy of Sciences is pharmacist as well as physician. He was born at Tullens in 1813. According to the C. & D. he filled the part of pharmacist at two Paris hospitals, but is best known for his studies on the comparative anatomy of plants. He entered the Paris School of Pharmacy as Professor of Botany, and became Director in 1874. For twelve years he has filled this post. On account of his thoroughness and severity be became so unpopular that the school had to be closed. He then retired. It is said to be due to his zeal that the Paris School was removed from the historic place in the rue de l'Arbalête to its present handsome quarters.

On Dec. 30, Prof. Oscar Liebreich celebrated his twenty-fifth anniversary as professor. According to the Apoth. Ztg. he was born Feb. 14, 1839 in Koenigsberg, Prussia. He at first went to sea but later took up the study of chemistry under Fresenius in Wiesbaden and became technical chemist. Then he went over to medicine, graduated in 1865 in Berlin and two years later became Virchow's assistant in the pathological institute of the Charité. In 1868 he became docent and in 1871 extraordinary professor. In 1872, after the death of Mitscherlich he became director of the pharmacological institute, a position which he still holds. With his first assistant, Prof. Langgard, he published a Compendium der Arzneimittellehre. He is also editor of the excellent Therapeutische Monatshefte published by Springer and is at present engaged in the task of editing an encyclopaedia of therapy. Among pharmacists Liebreich is known for having introduced chloral-hydrate as a hypnotic and wool fat into modern materia medica.

History.

Hindu Medicine.

One of the January numbers of *Nature* contains a review of a short history of Aryan medical science, a book of 280 pages and 10 plates written by H. H. Sir *Bhagoat Sinh Jee*, Thakore Saheb of Gondal and possessor of nnmerous titles, and published by Macmillan & Co., Ltd., of London.

"The author, an Indian prince, after studying medicine with diligence and distinction in this country, applied himself on his return to India to a study of the ancient medical science of Hindustan. As a result,

he presents in this treatise a bird's-eye view of the marvellous civilization of India, and he does so from the point of view of a Hindu, in a spirit of faith and optimism creditable to his piety and patriotism. Perhaps a larger exercise of the critical faculty might have been more acceptable to Western intelligence, especially as, in some matters of history and chronology, the author is at issue with European authorities; but it might have spoiled the picture, which is simple and bright. The writer prefaces his account of Indian medical science by a brief sketch of the early civilization of the Hindus and of their religion, philosophy, science and art. The science and art of medicine where an important feature in this great system, elaborated according to the same principles and by the same methods as other branches of knowledge, and therefore possessing the same merits and the same faults. 'The Hindus believe, the author tells us, that like all their sciences, the science of medicine has been revealed to them.'

"The bible of medicine is the "Ayur Veda", whose authorship is attributed to no. less personage than Brahma. Subsequent commentators, chief among them Charaka and Sushruta, have reproduced and somewhat amplified this record. The author, with great insight and judgement gives an interesting history and epitome of the doctrines and practices laid down in these works, of which he appends a list of 107. We observe that he has not included among these the 'Navanitaha', an ancient Sanskrit medical manuscript found by Captain Bower at Kuchar, in Eastern Turkestan, in 1890, and which is believed to be older than the works of Charaka and Sushruta. The development of science by the wise men of the East was a mixture of observation and contemplation. Their observation was keen though somewhat crude, but when the results were submitted to the process of intellectual digestion, an excessive addition to analysing and systematysing produced a code of knowledge into which imagination largely entered, and which was specious and unsound. The product, posessing the character and sanction of a revelation, became straightway a fixed guide, which has remained authorative and unaltered through the ages. The early medical observers scrutinized closely the structure and functions of the human body, and not content with noting and recording these, they must fully and finally explain them. For this purpose they invented three principles or essences or spirits — vata, pitta, and kafa — wind, bile and phlegm, which acting upon and through the constituent parts of the body, gave rise to all the manifold physiological manifestations of the organism. Disease was held to arise from excess, defect or disorder of one or more of these humors, and the object of the physician in examining the patient, was to detect which humour or humours were at fault, and select the remedy calculated to restrain, stimulate, or correct the aberrant flood. A doctrine of temperaments was built on the same basis. Associated with these hypothetical spirits, other supernatural agencies were postulated; faults committed in a former state of existance, and the operations of demons, where included among disease causes. It is not surprising, therefore, that rites, ceremonies, amulets, omens, and charms entered largely into treatment. The Thahore Saheb advances strong claims for the antiquity and excellence of Indian medicine. He contends that the medical science of the Greeks, Egyptians and Arabians, was extensively borrowed from India. He asserts that Jenner and Pasteur were anticipated in the matter of protective inoculation, Morton and Simpson in anaesthesia, Laennec in auscultation, Piarry in percussion, and Lister in antiseptics by Indian sages; that the vaunted discovery of Harvey was also presaged, if not preceded, by Indian doctrines regarding the circulation of the blood. He shows that modern medicine has derived important practices, such as massage, and many useful drugs from India, and even goes the length, in apologizing for the short-comings of Indian surgery, of asserting that in ancient times the use of drugs prevented or dispersed tumours, and other conditions now demanding surgical intervention. He expounds at some length the rules of hygiene and disease prevention laid down by the rishis. They are mostly personal, and their elaboration is astonishing. Life to the orthodox Hindu was a series of minute rites governing every item of daily existence — some salutary, but most of them frivolous.

Still, with all its absurdities, Indian medicine was a triumph of acumen and industry, and the author has succeeded in placing a very clear and complete compendium of it on record in this book, which he who runs may read. Perhaps his hope that rational and progressive medical science may still be able to learn something from Aryan medical science is a feasible one; but the materials and methods of the latter must to that end be recast in the furnace of modern inductive research.

Bibliography.

The New York Medical Record, published by William Wood & Co., has comleted its fiftieth volume.

Harper's Magazine for January contains an illustrated series of articles on the progress of science during the century, by Dr. Henry Smith Williams.

Die chemische Untersuchung und Beurtheilung des Weines by Dr. Karl Windisch is announced as just out by Julius Springer of Berlin.

Ginn & Co. announce the completion of a new laboratory manual for technical schools, high-schools and colleges. The author is Dr. Frank H. Thorp, instructor in industrial chemistry in the Mass. Inst. of Technology.

Stearns' calendar for 1897 is decorated with a reproduction, according to the three color process, of Carl Goebel's painting "The Duet". The original in possession of Mr. F. K. Stearns has given him and his friends great pleasure. In the reproduction it can now be enjoyed by many.

Die Umschau, a new journal, which is to supply a general oversight over the progress made in the sciences, technology, literature and art will be edited by O. A. Wolters and published by H. Bechold, Frankfurt a. M. Pharmacy is represented by G. Arends, one of the editors of the Pharmaceutische Zeitung of Berlin, who will contribute an article on old and new remedies in one of the early numbers of the journal.

The *Botanical Gazette* has again added to its list of editors. The names of nine foreign associate editors, representing seven European countries and Japan have been added to those of the four American associate editors announced with the change of the journal some months ago. Pharmacy is represented by Dr. Leon Guignard, Professor of Botany a the École snpérieure de Pharmacie of Paris. It is expected that this association will result in a larger recognition of American botanical work, the lack of which has more than once been pointed out in the Gazette.

Commercial.

Otto of Roses.

Mr. Vice-Consul Wratislaw, reporting on the trade of Eastern Roumelia, says it is probable that more land will be put under rose cultivation as the production of grain becomes less and less remunerative. But it is highly necessary that government or other supervision should be instituted in order to insure the purity of the otto exported, or European buyers would fight shy of the Bulgarian article. "Pure" otto was offered last year by certain firms at Kazanlik and Karlovo for 1200 fr. per kilo., about 200 fr. less than what producers asked merchants for the unadulterated article.

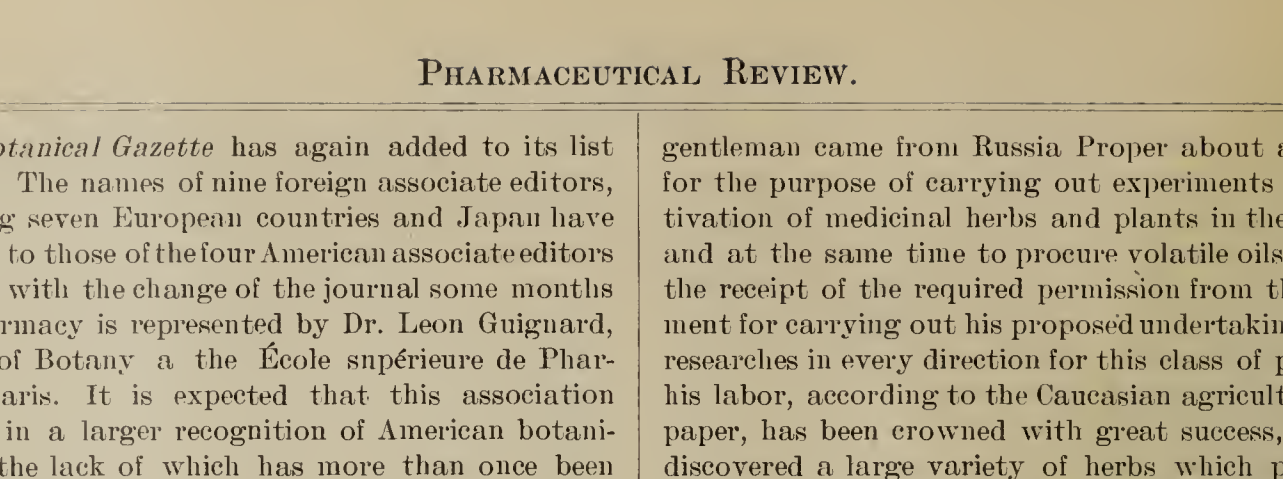
Cultivation of Medicinal Herbs and Plants.

The cousular report for November on the Agriculture of the District of Batoum states that an enterprising gentleman came from Russia Proper about a year ago for the purpose of carrying out experiments in the cultivation of medicinal herbs and plants in the Caucasus, and at the same time to procure volatile oils. Pending the receipt of the required permission from the Government for carrying out his proposed undertaking, he made researches in every direction for this class of plants, and his labor, according to the Caucasian agricultural newspaper, has been crowned with great success, he having discovered a large variety of herbs which possess important healing properties, the result being that he has received large orders from many Russian firms of druggists. With a view to encouraging the cultivation of the castor-oil plant, the Imperial Bank has been authorised to make advances, at all its branches, on the seed of this plant.

According to the C. & D. enormous shipments of cinchona bark have taken place from Java during the month of December last. The following figures indicate the total exports of the last four years.

	1896.	1895.	1894.	1893.
Dec. Amst., lbs.,	890,000	634,000	531,000	391,000
Whole year, "	10,079,000	8,827,000	8,917,000	7,342,000

According to the Drogisten Zeitung Bohemia has only 118 apothecary shops, but in addition over 200 drug stores. Prag with 201,400 inhabitants (excl. suburbs) has 19 first-class pharmacies and not less than 50 second-class stores. With such a number of drug stores the limitation of pharmacies can be but little protection to the pharmacist.

1856  1896

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SUPPLEMENT, MARCH 1897.

Educational and Scientific Institutions.

University of Munich.

Prof. A. Hilger, Director of the Pharmaceutical Institute and Laboratory for Applied Chemistry, describes with the use of plans the new laboratories in No. 11 of the Apotheker Zeitung. Attention was called to the peculiar relation between this institute and the Chemical Institute under Prof. v. Baeyer in the Jan. number of this journal.

A National University.

Last month attention was called to a movement on foot to create a Department of Science at Washington, so that the large amount of scientific research being done by the various bureaus of the national government might be guided by one scientific head. (p. 5.)

The editor of Science, in a recent issue, tries to show how the centralization along somewhat different lines might ultimately result in a national university. "The reconstruction of the University of Paris, the efforts in and out of the British Parliament to make a University of London, the great success of the University of Berlin, and the renewed advocacy of a National University at Washington, indicate a movement which, we believe, makes for the progress of education and science. There are dangers in centralization, but these are small in comparison with the promise of great centers, where specialization and cooperation can be carried forward to the degree demanded by the present state of learning and science."

The writer claims that the common school education is primarily for the benefit of the individual, whereas the higher education is chiefly for the benefit of the state. "All the money spent on universities since the first beginnings at Paris and Salerno has been paid back by the results of the education of one man such as Faraday or Pasteur." He also thinks that "a university supported directly by the people would have peculiar influence and special dignity." He points out that practical politics have entered neither West Point nor the Smithsonian Institution; that the "growth of the University of Berlin has not weakened the other German universities."

However, rather than to advocate the immediate establishment of a great national university, the writer rather hopes "for a gradual growth of the national institutions already at Washington."

"We have there great libraries, museums and laboratories, able investigators engaged in advancing pure and applied science, and younger men learning from them the methods of research. These are the essentials of a university. No university in the world includes so many or such able investigators, teachers and students of geology as the U. S. Geological Survey, and in many departments the work at Washington surpasses any American university in the amount of investigation accomplished and in the number of investigators trained. ..... We believe that, without radical changes and with nominal expense, there could be established at Washington a national university likely to become the world's greatest university."

Pharmacognosy and the U. S. Div. of Botany.

The Botanist of the U. S. Department of Agriculture in his annual report makes the following statement with reference to poisonous plants.

The work of the past year has been devoted largely to the development and extension of certain fundamental requirements, the increase of the library and reference collection of drugs, the broadening of the correspondence on poisonous plants, and the extension of the card index on this subject. This last work was pursued with the double object of facilitating the answering of current letters of inquiry and the acquisition of material for the ultimate publication of a manual on the poisonous plants of the United States. Over 1000 cards have already been collected from the scientific and popular literature of botany, chemistry, physiology and toxicology.

Special attention has been paid bibliographically to the collection of data in regard to the poisonous species of two families of plants, the *Ericaceæ* and the *Anacardiaceæ*. Information regarding the former has also been augmented through correspondence and by experimentation. An extended report has been prepared, but the work of investigation is not yet complete. The results obtained up to date show that a chemical antidote has been found for andromedotoxin, the poisonous constituent of poison laurel (*Kalmia latifolia*) and other plants of the family *Ericaceæ*. The utility of this antidote has thus far been shown only in the laboratory by chemical experiments and by experiments on guinea pigs; but its usefulness with larger animals, especially those like cattle and sheep, which live on bulky foods, is yet to be demonstrated.

The experimental work on the *Anacardiaceæ*, the family to which poison ivy (*Rhus radicans*) belongs, was confined to a verification of the results of other recent investigators on the properties of the poisonous principle, toxicodendrol. Large quantities of toxicodendrol were also shown to exist in *Rhus potentillæfolia*, a species of poison oak lately rediscovered in Mexico.

Two toxicological experiments were tried with extracts from a native species of flax (*Linum rigidum*), which we are informed is killing sheep in Texas. The results were affirmative, although the plant has not been generally recognized as poisonous.

Cases of poisoning involving over a dozen plants in other families have been presented by correspondents for consideration and advice. Four of these caused nearly fatal catastrophes to nine individuals; the others were fatal to animals. Four groups of species are especially interesting on account of the extent of the damage they inflict. These are the loco weeds (*Spiesia* and *Astragalus*), the poison laurels (*Kalmia*, *Rhododendron*, and *Azalea*), the larkspur (*Delphinium*), and the sneeze weed (*Helenium autumnale*). All are reported to be killing cattle by the hundreds. *Cicuta vagans*, a little-known plant related to poison hemlock, is also killing many cattle in northern California, Oregon and Washington. All these plants need careful investigation.

Scientific Societies.

Toronto Meeting of the British Association.

A. B. Macallum in Science calls attention at this early date to the extensive preparations that have been made for the meeting of B. A. A. S. at Toronto, Canada, commencing Wednesday, Aug. 18. The finance committee have been promised $27,500 to meet the expenses of the occasion. The sectional meetings are to take place in the buildings of the University of Toronto, which are centrally situated and which may be reached from all points of the city by means of the electric car system. As the University grounds are adjacent to the Queen's park and the residential portion of the city, this arrangement will thus be a most agreeable one for visitors. The presidential addresses and the evening lectures will be delivered in Massey Hall, which has been recently erected and is capable of holding about four thousand auditors.

The retiring President is Lord Lister, Lord of the Royal Society. The President-elect is Sir John Evans, K. C. B., Treasurer of the Royal Society, who will deliver the presidential address on the evening of the opening day.

It is desired to make the gathering largely an international one. The fellows and members of the A. A. A. S., which meets at Detroit, and is expected to visit Toronto, will be granted membership for this meeting upon payment of $5.00. From forty to fifty continental Europeans are also expected. This gathering, it is hoped, will do much to realize the hopes of those who advocate the formation of an International Association for the Advancement of Science.

American Pharmaceutical Association.

The Committee on scientific papers for the Minnetonka meeting of the Am. Pharm. Assn. offers the following list of queries as a stimulus to those who want suggestions. The Committee, however, wants it clearly understood that nobody need confine himself to any of the topics suggested.

1. A comparative examination of the various methods for solutions of formaldehyde is desirable.

2. Is mercuric chloride formed in tablets of calomel on standing? Examine (quantitatively) various commercial samples.

3. Does the addition of linalool acetate to oil of bergamot exert any uniform influence on the results of assay?

4. A convenient method of assay for oil of cinnamon is desired; it is claimed that the "sulphite" method is unsatisfactory.

5. What is the alkaloidal strength of the various specimens of "Norwood's Tincture" found in the market.

6. Comparative assays of the various commercial brands of iodoform and sublimate gauze are desirable.

7. To what extent is powdered acacia adulterated with dextrine?

8. Commercial litharge is grossly adulterated; what are the adulterants, and in what proportion are they present?

9. An inquiry into the nature and composition of "Morrhuol" is desired.

10. *Witch-hazel Water.* Is it desirable to make witch-hazel water (generally termed witch-hazel extract) official? Does it contain formalin? What percentage of alcohol should it contain?

11. Under what conditions can the diastasic power of malt preparations be preserved?

12. Is the use of suppository machines advisable for general prescription work?

13. A process for a fluid extract of wild cherry miscible with water is desired.

14. What is the character and quantity of fixed oil in pareira brava?

15. It has been stated that samples of potassium actate have an alliaceous odor. To what is that due?

16. What is the influence of a low temperature in percolation?

17. Would it be practical or advisable for pharmacists to undertake the dispensing of a sterilized and adapted (humanized) milk for infants? What process would be most advisable for this?

18. Is glucose or grape sugar of any value as a preservative in syrups of hydriodic acid and syrup of ferrous iodide?

19. What is the influence of filtration on solutions?

20. Salol is often ordered in powdered form. How can pure powdered salol be easily prepared?

21. Rubber substitutes. It is claimed that articles under this name are largely used by manufacturers as admixtures to Para rubber, being prepared of sulphur or chloride of sulphur and vegetable or animal oils, glycerin and turpentine. Investigation invited.

22. Acetone alcohol. An article under this name has been introduced as a substitute for ethyl alcohol. What is it, and how is it made?

23. It is claimed that the deep green color of some extracts and fluid extracts in the market is traceable to copper vessels used in their manufacture. Investigation invited.

24. Precipitated sulphur seems to be grossly adulterated. Is it possible to obtain it pure in the open market?

25. To what extent is selenium found in "flowers of sulphur?"

William C. Alpers, Chairman,
The Merck Pharmacy, University Place, N. Y.
Virgil Coblentz, Ph. D., Secretary,
College of Pharmacy, W. 68th St., N. Y.
W. L. Scoville, Associate,
College of Pharmacy, Boston, Mass.

Personals.

Prof. Victor Meyer of Heidelberg has been elected President of the German Chemical Society.

Mr. C. G. Lloyd, botanical editor of Drugs and Medicines of North America, has recently returned from a month's trip through Florida collecting fungi.

Prof. H. H. Rusby, formerly Recording Secretary of the Torrey Botanical Club, has been elected one of the Vice-Presidents of that society.

Dr. Beckmann, Professor of Pharmacy and Applied Chemistry at the University of Erlangen, will return to the University of Leipzig, where he formerly was Privatdocent in Ostwald's Laboratory.

Dr. R. Kobert, who has for ten years occupied the position of Professor of Pharmacology at the University of Dorpat, has resigned his chair in order to accept an appointment that has been offered to him of director of a sanitary establishment in Germany. It is to be hoped that his new position will enable him to continue at least his exceedingly interesting and valuable historic studies.

History.

Ethnologic Medicine.

The principles of the general development of the arts applied to Medicine (according to Science) is the subject of an article by Dr. J. H. McCormick in the American Antiquarian for August last. He points out that in many tribes, geographically remote, at the same stage of culture, similar ideas and methods in reference to the practice of medicine and the power of drugs prevailed. Magical formulas were adopted for the cure of disease, and mysterious and eccentric remedies were in vogue, all quite analogous in like stages of culture everywhere. The conjurations of the ancient Egyptians, *mutatis mutandis*, would pass for those of the Cherokees or Nahuas.

The author draws the just inference that those who assert that such similarities are evidences of historic unity, and that they should be explained by some ancient community of culture, do not apprehend modern psychology. This teaches, as its basic principle, that like conditions lead to similar trains of thought and those to analogous results.

Pharmacy among the Aztecs.

Dr. D. Luis Comenge finds evidence that the Aztecs had made considerable advances in medicine. Asylums for the invalid soldiers and hospitals for the sick and aged were maintained where the action of remedies could be studied in greater or less detail. They also suported botanical and zoological gardens. Sustained by evidence from Humboldt and other travelers, Comenge brings forward some interesting details. *Cassia fistula*, tamarinds, "neutle" (pulque) and "hoaxin" (a kind of tamarind from the leaves and pods of which a beverage was prepared), were used as laxatives. The seeds of *Ricinus communis*, a Mexican *Aristolochia*, valerian, and "cuitlpath", the root of "amamaxtla". a kind of rhubard, and above all jalap root, known by the abbreviated name "Halantlacuitlapilli", were used as purgatives. As Anthelmintic in young children, *Artemisia Mexicana* was used. The Aztecs used narcotics probably only to benumb the nerves of human sacrifices; *Cannabis Indica* and *Datura Stramonium* were called into service for this purpose. For certain nervous attacks, cramps and convulsions, they prescribed the juice of *Artemisia*. As diuretics, pulque, tobacco and *Veratrum Sabadilla* as well as *Cupressus Montezuma* H., the tubers of "zozoyatil", *Myrtus Pimenta*, *Taxates erecta*, *Centauria Cyanus Atropa dentata* and *Magnolia glauca* were used. As a remedy for calculi, a species of *Aristolochia* was used. For catarrh, *Salvia hispanica* was given. For wounds, urine, the leaves of *Schinus molle* and tobacco were administered.

[Apotheker Zeitung, No. 3, 1897, p. 25; from Farmacia Española.]

Bibliography.

Charles Scribner's Sons make a special offer to teachers for vol. I of Britton & Brown's Am. illustrated flora. (See Vol. 14, p. 282.)

Wm. R. Warner & Co. have ready for the press a pocket medical dictionary of about three hundred pages and comprising 10,000 definitions.

Ferdinand Encke announces the completion of the third volume of Otto Dammer's Handbuch der chemischen Technologie, a work in five volumes in which the editor is assisted by a number of colleagues.

Lemcke & Buechner call attention to the completion of the second volume of G. Kaufmann's large work: Geschichte der deutschen Universitäten, which deals with the origin and evolution of the German universities to the close of the Middle-Ages.

Under the title A Year of the X-Rays Prof. D. W. Hering will tell in Appletons' Popular Science Monthly for March in what directions progress has been made upon Roentgen's famous discovery. Some of the advances are indicated in the illustrations accompanying the article.

Due attention was called to the celebration of the 70th anniversary of Cannizzaro's birth-day last year. A volume dealing with the atomic and molecular theories and other subjects with which his name is connected, has just been published by international subscription as a souvenir of the event.

The Lloyd Library has been enriched by several large orders of books from Europe. Among those recently received is a collection of several hundred European pharmacopœias. A bibliographic article by Prof. Lloyd on American pharmacopœias and dispensatories appeared in the Dec. number of the Am. Journ. Pharm.

According to the Nation, Gustav Freytag's collection of over seven thousand volumes on the history of civilization in Germany has been added to the public library of Frankfurt. Freytag divided his collection into twenty-four departments, one of which comprised popular medicine. No doubt the pharmaceutical historian would find much of interest in this collection.

MM. L. Errera and E. Laurent offer a set of 15 colored wall plates illustrating plant physiology. These plates are suited in size for ordinary lecture room purposes, the dimensions being 70 cm. by 85 cm. From the statement of the prospectus, the choice of subjects seems good. The quality of execution can hardly be judged from the reduced sample cuts given. A volume explanatory of the plates accompanies each set. Price of plates and explanatory text, 50 francs. Publisher, H. Lamartin, 20, rue du Marché-au-Bois, Brussels, Belgium.

The Dutch Colonial Museum issues from time to time extra bulletins describing and illustrating oriental plants of economic and scientific interest. The large plates form a valuable accessory to the quite complete text. An

account of the genus characteristics is followed by a full description of the species with frequent citations of older authors. A brief account of the chemical information concerning the plant and its products as well as the uses to which they are put completes the monographic treatment. Abundant and extended footnotes frequently contain much of valne, critical notes, historical observations and other features of interest to the student find place. These bulletins are printed in the Dutch language.

To all interested in the European flora and in particular that of Germany, the Deutsche Botanische Monatsschrift, published by Gebrüder Bornträger, Berlin, offers much of value. This periodical, enlarged to about 30 pages per month, contains articles, frequently illustrated, from the pens of Germany's foremost systematists. Since the prime object of this magazine is to contribute to the knowledge of the flora of Germany, certain genera of especial difficulty in that range receive particular attention. Among such genera may be mentioned *Salix*, *Rosa*, *Rubus* and *Hieracium*. While edited especially in the interests of systematics, articles in morphology and other branches of botany occasionally find place. In addition to original contributions, reviews of recent literature, news from botanical societies and personals receive attention.

Price-lists received: —

Lemcke & Buechner, New York. Monthly Bulletin of World-Literature, Nos. 11 and 12, 1896.

Oswald Weigel, Leipzig. Botanischer Lagerkatolog No. 83.

Commercial.

Queensland Arrowroot.

The following figures indicate the extent of the cultivation of arrowroot-producing plants in the indicated province of Australia.

Year.	Acres planted.	Arrowroot yield.
1892	222	576,738 lbs.
1893	192	448,737 "
1894	282	534,687 "
1895	192	346,853 "

Two plants are cultivated, the purple arrowroot, *Canna edulis*, and the white arrowroot, *Maranta arundinacea*. The former is chiefly grown, since the bulbs or roots spread near the surface of the ground and are easily harvested, while the white strikes deeply into the ground and is dug only with considerable labor. Since the product from the purple arrowroot is regarded as an adulteration if sold as arrowroot, very little goes to the United Kingdom, the greater part being exported to other parts of Australasia.

[Chemist & Druggist, 50, p. 129.]

Price-lists received: —

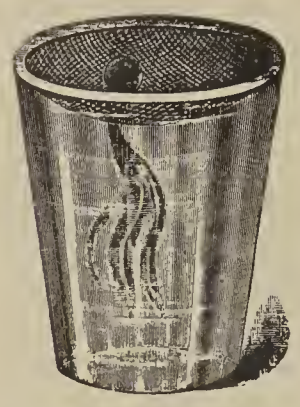
C. F. Boehringer & Soehne, New York. Price List. 1897.

G. & R. Fritz, Vienna. Preis-Liste, Januar 1897.

The Roessler & Hasslacher Chem. Co., New York. February 1897.

Mueller & Co. — Fehrenbach & N. Y. Scientific and Chemical Glass-ware.

Dr. Peters & Rost—Berlin. Neue Laboratoriums Apparate. Dec. 1896.



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Do not attempt to **test** the **solubility** or **insolubility** of a pill by hammering it on a pine board. What does it signify? **Simply take a glass of water 98° to 100° and suspend the pill as indicated below:**

The TRUE TEST of the solubility of a pill.

This test is demonstrative and conclusive proof of the solubility of mass pills, bearing the name of **Wm. R. Warner & Co.** because what **dissolves in plain water must dissolve in the warm visceral fluids of the body.**

FRIABILITY is no proof of **SOLUBILITY** as is evidenced by the following experiment:

Our chemist took Pil. Cathartic Comp. of Wm. R. Warner & Co.'s make (and the same of Friable Pills) and placed them in water 98° to 100°.

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PIL. CATHARTIC COMP.

WM. R. WARNER & CO. (Mass Pills)
Sugar-coated — dissolved in 20 minutes.
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Dissolved in 65 minutes.

Every five minutes the pills were rolled with the finger, each getting **same amount** of rolling, or about equivalent to peristaltic action. We have proven the solubility of our mass pills. We have proven that **Mass Pills are more soluble than Friable Pills.** Try it yourself and you will reiterate our statement that

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Our pill business has been established for the past forty years, and we have never had complaints as to the inactivity of our pills. By taking a dose of Cathartic Pills and noting results is all that is necessary to prove their efficacy.

WM. R. WARNER & COMPANY,

MANUFACTURING PHARMACISTS, PHILADELPHIA.

SUPPLEMENT, APRIL 1897.

Educational and Scientific Institutions.

Bacteriology at the N. Y. College of Pharmacy.

President Kemp of the N. Y. College of Pharmacy, impressed with the needs of bacteriological instruction, has donated $500.00 for the equipment of a bacteriologieal laboratory. Dr. Jelliffe is to be in charge of the work.

A Botanical Museum.

Prof. Dr. Hausknecht has erected a botanical museum in Weimar at his own expense, which is placed under the direction of the Botanical Society of Thuringia. It is to serve as a central station or institute for investigation of systematie botany.

Biltmore Forest and Herbarium.

At Biltmore, North Carolina, Mr. Geo. W. Vanderbilt owns an extensive tract of land known as the Biltmore Forest. The owner has undertaken to place these lands under systematic forest management as a permanent source of income. With this end in view skilled foresters and woodsmen are employed to superintend the regeneration and care of the forest and the harvesting of the timber. On a portion of the estate an arboretum will be maintained, while a library of forest botanical works and an herbarium will furnish opportunities for the study of forestry questions.

The directors of the herbarium announce in a neat pamphlet, recently issued, a list of several hundred North Carolina plants for exchange. Among these are some that can rarely be obtained in exchange. Persons desiring plants from this region should correspond with the curator Mr. C. D. Beadle, who will gladly furnish information to all wishing to exchange.

University of Berlin.

The university at the German capitol is to have a new chemical institute which is to cost 943,900 marks. The equipment is estimated at 250,000 M. more. This will give the best laboratory facilities for the study of chemistry to the University of Berlin, a prerogative which it lost a number of years ago. The old institute built according to the plans of A. W. v. Hofmann in 1865/9 had a lecture capacity for 300 and working desks for 70. At that time it was again as large as any chemical institute in Germany. The study of chemistry at other universities, however, was stimulated by the erection of large and elegantly equipped laboratories, so that Berlin had to take a back seat in this respect. This was true even in spite of the erection of a second chemical institute at Berlin with a working capacity of 38 and an addition of 12 desks to the old laboratory. The new institute is to contain a lecture room with a capacity for 400, laboratory places for 250 students and desks for 25 independent investigators. The present budget allows M. 200,000 with which to begin the work.

British Universities and the Natural Sciences.

From a recent number of the Pharmaceutical Journal we take the following "annotation": — "British universities, it is contended, do not turn out the right sort of men, and our manufacturers do not demand the right sort of information. The universities cram men with book knowledge, and test it by everlasting examinations. As a result they turn out pedagogues very competent to cram and examine in their turn, but possessing neither ability nor inclination to deal with the application of science to affairs. In Germany, on the other hand, science training deals with things, not only with books, it places its men according to the ability they display in conducting actual investigations and solving practical problems for themselves. When those men leave college they gladly enter the laboratories of manufacturers, where they are entirely at home and immediately useful, and manufacturers are equally glad to have them, and to pay them for research conjoined with practical direction of existing processes. It is not to be wondered at, therefore, that British manufacturers who try book-made men of science, find them upon the whole of less use than intelligent foremen, and we are forced to the conclusion, that, if Germany be really pushing us out of markets in which success depends upon the continuous application of science to affairs, the reason is, as recently stated in this Journal, 'lack of enterprise, disinclination to depart from old-fashioned habits, unsatisfactory business methods, and support of fads.'"

Dissolution of a Bogus Medical College.

The checkered career of the Wisconsin Eclectic Medical College of Milwaukee has come to a close as far as Wisconsin is concerned. A meeting of the directors of the college was held in Milwaukee on the 4th of last month, at which time a resolution of dissolution was adopted. A notice of dissolution was filed in the office of the secretary of state on the 8th.

Attention was called in this journal to the vicious proceedings of this bogus institution last summer (vol. 14, p. 145). Articles of corporation had been filed Dec. 31, 1895. Under the laws of the state incorporation could not be refused by the secretary of state. The attention of the state attorney, however, was soon directed to the manner in which this college sold diplomas without having a faculty or any other facilities whatever for teaching. Druggists, nurses and others with a smattering of medical knowledge were flooded with circulars denouncing regular medical education and offering degrees at almost any price.

Having learned these facts by a personal visit to the college and after consultation with "Dr." Fred. Rutland, its president, the state attorney secured an order from the supreme court allowing him to institute proceedings to revoke the charter of the college. Actual proceedings, which were delayed, became unnecessary, a notice of dissolution having been filed.

Shortly after proceedings were instituted the "college" moved its headquarters to 1001 West Congress St., Chicago. A month or more ago "Dr." Rut-

land was arrested in Chicago by the postal authorities for fraudulently using the U.S. mails. This was brought about by the secretary of state for Wisconsin, who wrote to the postmaster at Chicago under date of Oct. 7, calling his attention to the methods of the college and the action taken in Wisconsin.

A member of the present Wisconsin legislature, who makes no claim whatever to the possession of medical knowledge or skill, holds a diploma from this college. He seems to make good use of this diploma to secure the passage of a medical bill now pending before the legislature. The people of Wisconsin have been so thoroughly roused by the shameful proceedings of this fraudulent institution that the passage of a state medical bill does not seem altogether improbable at present.

Miscellany.

Dr. de Vrij, the nestor of Dutch apothecaries, celebrated his 84th birthday on January 31 of this year, yet, according to his own words, he is one of those who are among the first to welcome any necessary and useful change.

A Centenary.

An electrical exhibition will be held in 1899 at Como to celebrate the centenary of the invention of the Voltaic pile—Volta being a son whom Como delights to honor. It happens that Turin is going to have a similar show in 1898, but Come counts upon the prestige of Volta's name, as well as upon such relics of him as it may be possible to gather together, to counterbalance the prejudice resulting from this fact. The exhibition will not be confined to electricity alone, but will include fabrics of silk, Como's greatest actual industry.

Attfield Testimonial.

The retirement of Prof. Attfield from the school of the Pharmaceutical Society after thirty-four years as teacher, and the causes for such retirement were duly announced last year. That the personal friends and former students desired to honor their friend and teacher also soon became known. It seems, however, that numerous persons, who simply knew of Dr. Attfield through his Manual of Chemistry or other publications also became desirous of adding their tribute to that of his personal friends and pupils. The Secretary and Treasurer of the General Committee (Mr. John Moss, 39, Tressillian Road, St. John's, London, S. E.) has sent out a circular informing such persons who desire to honor Prof. Attfield, that their tribute will be welcome.

The testimonial is to take principally the form of an illuminated album containing the names, "(a.) of his pupils at Bloomsbury during his professorship of 34 years there, (b.) of those students of his writings and his Manual who feel that the honour and advantage of their calling have been promoted by his labours, and (c.) of his pharmaceutical, medical, chemical and other public friends generally in Great Britain and Ireland, India, the Colonies and the United States."

Professor Hubert Herkomer, the great Academician and friend of Prof. Attfield has offered to "do a plate" of the Professor according to his new method. This plate he has practically placed at the disposal of the committee. Whereas those who send their autographs are expected to contribute sufficient to defray the expenses of the album (not to exceed five shillings), those who desire a copy of this portrait signed by the artist are expected to send neither more nor less than ten shillings. Inasmuch as it will be impossible for the committee to obtain the addresses of all who may desire to contribute, those sufficiently interested can address the Secretary, whose address is given above.

A Year of the X Rays.

Many experiments were made to determine the source from which the rays proceed before it was learned definitely that they emanate from the surface upon which the cathode rays first impinge — a fact that was announced almost simultaneously by several experimenters. It is one of the important points that have been determined, and even this was distinctly intimated by Prof. Röntgen in the twelfth section of his original paper.

In intensity they vary inversely as the square of the distance from their source.

They electrify some bodies positively and some negatively, and whatever charge a body may already have they reduce or change it to the charge which they would independently give to the body. Their penetrating power depends upon the length of time they act.

Thus, gradually, these and many additional isolated facts have been established, and no doubt enough data will be accumulated eventually to permit generalization into laws; but that stage has not yet been reached.

Four theories have been suggested:

1. "They are ether waves, like ordinary light, but of exceedingly brief period, therefore ultra ultra-violet."

2. "They are streams of material particles."

3. "They are vortices of the intermolecular ether, forced from the cathode when the gas pressure is sufficiently low. Rectilinear propagation, absence of reflection, etc., follow from the properties of vortices."

4. "They are variations of stress in the dielectric surrounding the vacuum tubes."

Each of these theories is entitled to the Scotch verdict "Not proven," though the preponderance of opinion is on the side of the first. Still, it can not yet be said to be more than opinion.

[Pop. Sc. Monthly, March.]

In Memoriam.

Prof. Bourgoin, Professor of Pharmacy at the Paris School of Pharmacy and Director of the Pharmacie centrale des hôpitaux de Paris is reported as having died suddenly.

Dr. Paul Taubert, formerly of the Royal Botanical Museum of Berlin, who left for Brazil a year ago with his wife in order to botanically explore the Amazon territory, died of yellow fever.

Prof. Constantin v. Ettinghausen died Jan. 31 in Graz, Austria, at the age of 71. He was professor of botany at the University and as such was teacher also of pharmaceutical students. He is, however, better known in general botany and paleontology.

Bibliography.

The new supplement to the Belgian Pharmacopœia which was to have appeared in January, will, it is announced, not be out until May 1.

The chemical library of Prof. A. v. Kekulé consisting of 19,000 volumes, has been purchased by the Farbenfabriken, formerly Friedrich Bayer & Co., of Elberfeld.

John Wiley & Sons have issued a revised and enlarged third edition of Laboratory Calculations and specific gravity tables by John S. Adriance. All the calculations are based on the atomic weights as recalculated in 1882 by Prof. F. W. Clarke.

Julius Springer annouces as just out a Handbuch der Arzneimittellehre by Dr. S. Rabow and Dr. L. Bourget, both professors at the University at Lausanne. It is intended for the use of students and practicing physicians. The book appears simultaneously in both the French and German languages.

Felix Alcan announces the completion of the sixth enlarged edition of the Dictionnaire de Médecine et de Thérapeutique by Professors E. Bouchut and A. Després, both of the medical faculty of Paris. It is a double column quarto volume of 1630 pages with 1001 engravings in the the text and three charts.

The Table of specific gravities of U. S. P. preparations compiled by F. Dietze, an apothecary of Berlin, Ger., which appeared in the February number of this journal, has been struck off as separates on card-board for laboratory use. Copies can be had from the Pharm. Review Publ. Co.

Wahl and Henius announce as in the press their Handy-book of the brewing, malting and auxiliary trades. Its primary object is to supply a reference book that shall give to the practitioner or the student full information in concise, but clear, form on such questions as may call for explanations from day to day.

The Pharmaceutische Wochenschrift, a pharmaceutical weekly, published in Berlin, has with the beginning of the fourteenth volume reduced the size of its page one-half, whereas the Pharmaceutische Zeitschrift für Russland another pharmaceutical weekly, published in the German language in St. Petersburg, has almost doubled the size of its page with the first number of the thirty-sixth volume.

Dr. Josef Bersch, editor of the recently completed Waarenlexikon, published by A. Hartleben's Verlag of Vienna, is now engaged in editing a Chemisch-technisches Lexikon, which is to contain 17,000 recipes pertaining to all industries and the arts. The work is published by the same Vienna firm and the editor is assisted by numerous colaborers of the Chemisch-technische Bibliothek.

The New England Druggist has been purchased by the "retail pharmacists of New England," who, "recognizing the desirability and advantages of a corporation that should own and publish a pharmaceutical journal entirely devoted to the interests of progressive pharmacy," have herewith entered the field of pharmaceutical journalism. Prof. Wilbur L. Scoville remains editor of the journal.

Catalogues received:

Lemcke & Buechner — New York. Monthly Bulletin of World-Literature, Jan. 1897.

F. Bauermeister — Glasgow. Classified catatalogue of the leading English, German, French, Italian and some American Medical Periodicals.

Open Court Publ. Co. — Chicago. Important biological publications and works on kindred topics.

Gustav Fock — Leipzig. Lagerverzeichniss No. 126: Medicin.

Commercial.

The Merck Pharmacy.

Circulars have been issued informing the pharmaceutical public that the Merck Pharmacy, about which there has been a great stirr in certain quarters, has been opened. It is not only to be a model pharmacy in the best sense of the word, but it is to be, in a certain sense, a central pharmacy. Inasmuch as a circular, giving a full account of the character and object of the pharmacy, has been issued by the director, Mr. Alpers, all that is necessary at this time is to record an event that will no doubt be considered a milestone in the history of American pharmacy.

The Trade in Crude Rubber and the Sources of Gutta-percha.

The Popular Science Monthly for March contains an unusual number of articles of special interest to pharmacists. The trade in crude rubber and the sources of gutta-percha are discussed by Clarke-Dooley.

This remarkable substance is obtained from the milky juice of certain trees and different varieties of climbers. South America is the principal source of supply—Brazil, of the many states producing it, leading in quantity and quality, and having in its great forests sufficient to meet twice the wants of the world. The best in Pará (fine, medium, and *sernamby*), from the great basin of the Amazon, where more than eighty thousand *seringueiros* (gatherers) are engaged in the dry season in collecting gum. White Pará, "virgin sheets," a new variety in three grades, comes from Matto Grosso. Since its importance first began to be felt, this gum has exerted an increasing influence upon the spread of civilization, especially along the Amazon and Orinoco and their tributaries and the great streams which pour out from the interior of the Dark Continent. Pará, formerly an insignificant village, has grown to be a city of a hundred thousand inhabitants, with modern features, and Manáos, up the river, is fast following it. India rubber is the mainstay of the northern Brazilian states, Bolivia, and eastern Peru. Brazil has a great advantage in its immense waterway; ocean-going steamers run twelve hundred miles up the Amazon, whereas every African river except the Congo has a bar at its mouth and cataracts not far distant from the coast line. It is, besides ivory, about the only commodity produced in the interior of a tropical

country that will bear the expense of transportation, often on the heads of natives along tangled man-paths, to the seaboard. So in many places it has been the basis of first commerce.

Gutta-percha, like India rubber, is obtained from the juices of certain trees and climbers. The best is produced by a tree, the *Isonandra gutta*, of the order *Sapotaceæ*, which formerly abounded at Singapore and in all Malaysia, but which now tends to disappear under the ravages committed by gatherers. *Gutta*, in Malay, signifies gum or lime; *percha* signifies scrap. Incisions are made in the bark, as on rubber trees, and the liquor flows of perfect whiteness, darkening at contact of air. Coagulation takes place spontaneously in a short time. Like rubber, the liquid forms a film on top. This cream is removed, kneaded into a large lump and plunged into boiling water. Under the action of a high temperature it softens and forms the cake usually found in commerce. Other trees in Malaysia and Farther India, in Cambodia and Cochin China, produce good gutta. In Hindustan different grades are mixed by the natives. Chinese merchants, in their depots, mix and manipulate to give a good appearance to the product, as the price is constantly advancing. As the gatherers also do not scruple to add vegetable *débris*, earth, or sand, it has become difficult to secure a pure article. An inferior quality is obtained from trees and climbers in Africa and Madagascar, and, with the development of those countries, more may be expected.

Reports and Catalogues received:—

Caeser & Loretz—Halle a. S. Geschäfts-Bericht, Sept. 1895, pp. 44, and Sept. 1896, pp. 51.

Heinrich Haensel — Pirna a. d. Elbe. Bericht über das vierte Vierteljahr 1896, pp. 32.

—— Extract from quarterly report on essential oils and fruit essence. Jan. 1897.

Max Kaehler & Martini—Berlin. II Nachträge, 1897.

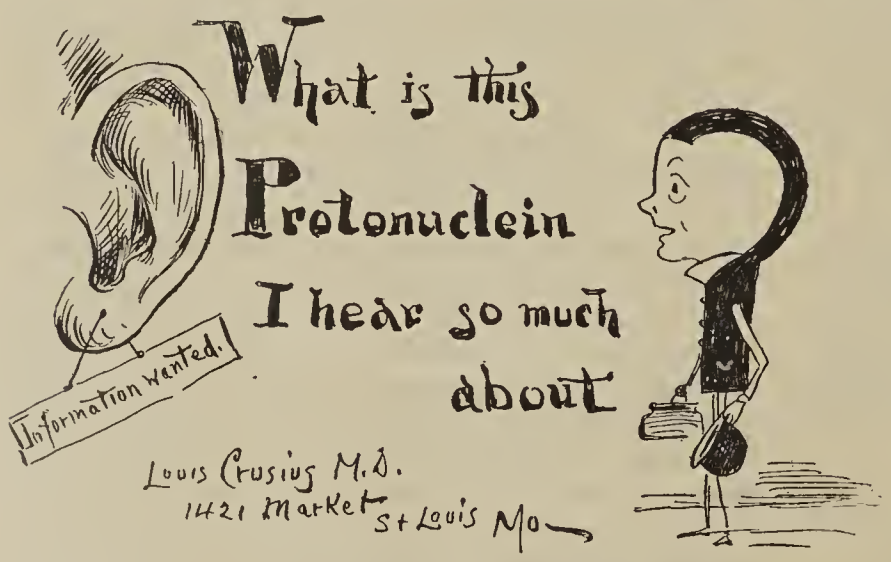
Lachesis rhombeata and its Venom.

In homeopathic materia medica are two preparations called *Lachesis* which contain the venom of *Lachesis rhombeata* or *muta* L. (in homeopathic literature *Trigonocephalus Lachesis*) with powdered milk sugar or merely diluted.

This highly dangerous reptile lives in pairs in the primeval Brazilian forests and is closely related to the rattle-snake. The tail ends in the male in a long (4 to 10 cm.), horny, black point, which in the female remains rudimentary. Dr. Th. Peckolt of Rio de Janeiro has studied the venom of this serpent. The amount present is proportional to the length of the animal. A male specimen 3 meters long, 21 cm. in circumference yielded 1.680 grams of poison. The poison fangs were 6 cm. long. The male and female are nearly alike in markings, the back being dirty reddish, the belly shining yellowish-white.

The fat of this reptile is white, thickly fluid, with a repulsive odor. Sp. grav. at 25° C. 0.906. The animal gives out a musk-like odor which betrays its presence. The venom is acid in reaction, odorless, with a sp. grav. of 0.9845 at 23° C. After preservation for a year, the venom still remained unchanged.

[Oesterr. Zeitschr. f. Pharm., Nos. 2 & 3, 1897.]



(Reproduction from Postal Card.)

Among the many inquiries we receive, the one here reproduced is so unique that we have, with thanks to the artist, made use of it in place of our regular advertisement for this month.

PROTONUCLEIN

stimulates the nutritive functions, increases resistance to disease, promotes glandular secretion and restores tone to the system; cell life throughout the organism is stimulated and health augmented.

Samples and literature upon request.

REED & CARNRICK,

NEW YORK.

SUPPLEMENT, MAY 1897.

Educational and Scientific Institutions.

University of St. Petersburg.

Mr. Ssimin has donated 100,000 roubles to the University of St. Petersburg for a bactcriological observatory.

Consolidation of Medical Colleges.

The Medical College of the New York University and the Bellevue Hospital Medical College, according to Science, have been consolidated under the control of New York University. The enrollment of students last year in the two schools was 1057.

University of Berlin.

According to Science, a bill before the German House of Representatives appropriates about two and a half million dollars for rebuilding the hospitals and clinics of the University of Berlin, and about two million dollars for the establishment of the Botanical Gardens with its museum and the pharmaceutical laboratory at Dahlem.

National Department of Health.

In view of the present advocacy of a department of health under our government, it may be worth noting that the Lancet commends a similar plan for Great Britain, proposing that there be a minister of health with a seat in the Cabinet. If such a department is established at Washington, Pharmacy should not remain without representation.

National Department of Science.

The forcible arguments urged by Lord Lister and other members of the recent deputation to the British Prime Minister on the question of a National Physical Laboratory apply equally to a similar institution at Washington. Attention is called to the able advocacy of this plan by Professor F. W. Clark in Science (Jan. 22d). A department that will do for the manufacturers and commerce of the nation what the Department of Agriculture now does for the agricultural interests might properly begin with an intitution at Washinston similar to the German Reichsanstalt and the National Physical Laboratory now urged by English men of science.

Scientific Societies.

American Medical Association.

The American Medical Association will meet in Philadelphia, beginning on June 1st. The American Publishers' Association meets on the preceeding day. There are said to be published in America 275 medical journals, of which 10 are issued weekly, 11 semi-monthly, 225 monthly, 6 bi-monthly, and 23 quarterly.

Germany's Apothekerrat.

Director Dr. von Bartsch has issued circulars to the members of the Apothekerrat inviting them to attend a session on the 31st of this month and the following days. The German apothecaries have been clamoring for years for representation in the government councils of their affairs. It is of interest to note that the subject suggested for discussion by the minister at the first session pertains to women pharmacists: To what extent and under which conditions can women be employed in pharmacy. Two reports have been prepared and submitted to the members of the council.

Paris Apothecaries Society.

This society celebrated a hundreth anniversary on March 18 and expects to celebrate another in 1903. The first celebration was in honor of the revival of regular pharmaceutical instruction at the School of Pharmacy under the directorship of Trousson. For several years previous the members of the school were more interested in the preparation of saltpetre, beetsugar and other useful articles than in teaching. The second centennial will be in honor of the reorganization of the society in its present form.

XII. International Medical Congress.

The Twelfth International Medical Congress will convene, as announced last year, in Moscow from the seventh to the fourteenth of August. The congress will be comprised of physicians, but other scientists, including pharmacists, are admitted as extraordinary members. The extraordinary members will receive all of the publications, but their activity will be restricted to the sections in which they are inscribed and they will not be permitted to vote on questions concerning the organization of the congress. Of the fifteen sections the following are of interest not only to physicians, but to others as well: —

II. Physiology, comprising medical chemistry.

IV. *a*. General Therapy, including hydrotherapy and climatotherapy.

IV *b*. Pharmacology.

IV *c*. Pharmacognosy and Pharmacy.

XV. Legal Medicine.

French is the officially recognized language of the Congress, but communications can be written and debates in the sections can be conducted in either French, German, English or Russian.

Calendar of State Pharmaceutical Associations.

Name.	Date.	Place.	Secretary.
Alabama	May 11,12	Selma	P. C. Candidus, Mobile.
Arkansas	May 12-14	Little Rock	J. B. Bond, Jr., Little Rock.
California	May 11,12	San Francisco	G. J. Harvey, San Francisco.
Delaware	May 6	Milford	F. W. Fenn, Wilmington.
Florida	May 12 ? (or 18)	Pensacola	H. C. Cushman, Pensacola.
Georgia	May 18,19	Macon	C. T. King, Macon.
Indian Territory.	May 18-20	South McAlester	E. P. White, Claremore.
Kansas	May —	Junction City	Mrs. M. O. Miner, Hiawatha.
Louisiana	May 11-13	New Orleans	J. A. Legendre, New Orleans
Maryland	May 12	Baltimore	J. H. Hancock, Baltimore.
New Jersey	May 5, 6	Princeton	G. T. Fitzgeorge, Trenton.
North Carolina	May 12	Raleigh	H. R. Howe, Fayetteville.
South Carolina	May 20	Charleston	J. A. Barbot, Charleston.
Texas	May 18-20	Galveston	R. H. Walker, Gonzales.

History.

Some Historic Facts about Glycerin.

The following is a translation from an article by G. Arends in the Ber. d. pharm. Gesellsch. on The history and technology of glycerin.

Seldom has a product, which for centuries had been regarded as useless waste, gained in so short a time an equally important place in the chemical industry and in technics as has glycerin. Only 50 years ago it was merely an object of scientific interest and that only very limited, yet since the discovery of nitroglycerin by Nobel in 1862 and of dynamite in 1867 it has become the fundamental requisite for the most important technical works which man has yet undertaken, and it may claim a large share of the success achieved in recent years in all the branches of commerce, industry, mining and national defense. One need only think of the great benefit of our great tunnels and artificial channels, the power of mines and torpedoes and the countless other uses of dynamite in the arts. Glycerin itself has grown no less important, since in consequence of the extended production of stearin-candles large quantities of it were produced, which had to be utilized. This whole product is now used in the manufacture of explosives, of soap and perfumes, in printing, in the manufacture of woven fabrics, in the gas industry, in pharmacy and a few other industries.

As is well known, glycerin was discovered in 1779 by Scheele, when after washing lead plaster he subjected the water to a closer examination. Later he also isolated it from almond oil, lard, butter, etc., and called it *Ölsüss*, while others advocated the names *Fettzucker* or *Ölzucker* (whence the old name *Principium dulce oleorum*). Chevreul was the first to introduce the name glycerin, after having studied the substance more closely and learned its alcoholic nature, giving it the constitutional formula C_3H_2O+HO. Pelouse in 1826 expressed the hydrous glycerin by $C_6H_7O_5+HO$ and the anhydrous preparation by $C_6H_5O_7$, whereas Stenhouse in 1841, concluded from the analysis of palmitin, that glycerin ought to be represented by the formula C_3H_2O, and Berzelius soon after (1844) believed in the presence of a special radical in the fatty oils and the fats which he called Lipyl and designated it by the formula C_3H_2. He represented glycerin as the oxide of this radical, whence the name, formerly used, Lypiloxide C_3H_2O. Later it was thought to be the hydrate of a substance, of glyceryloxide, $C_6H_7O_5$, and consequently it was called glyceryloxydehydrate $C_6H_8O_6$, but Mohr in his commentary on the *Pharm. Borussica VII* says that this conclusion is wrong: "If it were a basic oxide, how could it liberate itself from the fatty acid (by water vapor) with which it is in constant intact." Yet the assumption, that glycerin is basic hydrate, was not wrong, for at the present time we consider it a basic substance, a triatomic alcohol with the formula $C_3H_5(OH)_3$, ever since Berthelot has established its triatomic nature.

Personals.

Mr. C. G. Lloyd is again on a botanizing trip in the South. At present he is in Louisiana where rains and floods are enabling him to reap a rich harvest of fungi.

Mr. E. P. Sheldon, lately instructor in botany at the University of Minnesota, has accepted a commission from the National Herbarium to organize a field party for the exploration of the Blue Mountains in Oregon. He expects to devote at least six months to the field work.

From the plans submitted in the competition for a statue of von Helmholtz, those by the sculptors Lessing, Hertert and Jauensch have been selected and exhibited in Berlin. The final selection has not been announced. The statue will be placed in the court of the University near the statues of the two Humboldts.

In Memoriam.

Josef Fuchs.

The Austrian Apothecaries Society has suffered a great loss in the death of Mr. Josef Fuchs. He was not only a member of the society for 33 years, but was of great service as custodian of the society's collections, and an officer for fourteen years at the pharmaceutical school. He did not only serve without remuneration but donated while living 40,000 fl. to the society. Such members and officers are rare indeed.

Edson Sewell Bastin.

Edson Sewell Bastin, Professor of Materia Medica and Botany at the Philadelphia College of Pharmacy, died on Tuesday morning, April 6, 1897, at the Medico-Chirurgical Hospital of Philadelphia, the immediate cause of death being cerebral hemorrhage. While he had been suffering from nervous prostration since last October, and had been unable to attend to his work, his sudden demise came as a shock to his many friends. The funeral was held at his late residence in Merchantville, N. J., on Friday, April 9, 1897, and was largely attended by members and students of the Philadelphia College of Pharmacy, members of the Alumni Association an friends of the deceased.

Professor Bastin was born near Milwaukee in 1843. His early life was spent in attendance upon the district school and in work upon his father's farm. When fifteen years of age he went to Carroll College, in Waukesha, Wis., but while he was studying there the Civil War broke out, and, going to the front at once, he served three years in the United States Volunteer Corps.

In October, 1865, Professor Bastin entered the University of Chicago as a student, and graduated in 1867. Shortly afterwards he entered the drug business, but in 1874 he sold out and commenced teaching in the Chicago University, where he remained for some years, the larger part of the time occupying the chair of Geology and Botany. In 1876 he accepted the position of Lecturer on Botany at the Chicago College of Pharmacy. Resigning from this institution in 1889 he began lecturing in the Northwestern University College of Pharmacy, where he remained until 1893.

He was appointed to the position he held in the Philadelphia College of Pharmacy on October 4, 1893, to succeed the late Prof. John M. Maisch, in which position he did much to materially improve the instruction of both botany and materia medica.

Bibliography.

A new edition of the Russian Pharmacopœia is in course of preparation.

The fourth edition of Dr. Alexander Classen's Quantitave Analyse durch Elektrolyse has just been published by Julius Springer of Berlin.

Vandenhoek & Ruprecht of Goettingen have published Beiträge zur Kenntniss aliphatischer Terpenabkömmlinge, by W. Naschold.

Ueber Schilddrüsentherapie und Iodothyrin (formerly thyroiodine) by E. Roos has been published by J. C. B. Mohr, Freiburg i. B.

The first edition of the New York State Botanists' Report on Poisonous and Edible Fungi has proved insufficient to supply the demand, so that it will be impossible to fill further orders for this work unless a new edition is printed.

No. 1658 of the Nation contains an interesting review of two new books on Dalton and the atomic theory, the one by Sir Henry E. Roscoe and the other by Roscoe and A. Harden. Both books are published by G. Macmillan.

Zeitschrift für comprimirte und flüssige Gase is the title of a new journal published in Berlin and edited by Dr. M. Altschul (Berlin C., Adlerstr. 14). The cooperation of about forty eminent colaborers has been secured.

Volume one of Sammlung chemischer und chemisch-technischer Vorträge by Prof. Felix B. Ahrens has been completed a short time ago. It contains nine essays by eight specialists. The publisher, Ferdinand Enke of Stuttgart, now announces as completed part one of volume two: Die Benzoltheorie by Dr. Willy Markwald.

The history of the Bubonic Plague is told and its nature described in Appletons' Popular Science Monthly for May by Prof. Victor C. Vaughan, of the University of Michigan, who also considers the conditions that contribute to its spread, and presents the results of the latest studies of the bacillus by which it is supposed to be engendered.

The French Minister of Instruction has called a commission to edit a new edition of the French pharmacopœia. President: the Director of higher education Liard; Vice-President: the Director of the Paris School of Pharmacy Brouardel. Among the members of this commission pharmacy will be represented by Bourquelot, Jungfleisch, Moissan, Prunier, Vigier and Yvon.

The Zeitschrift für Bücherfreunde is a new journal published by Velhagen & Klasing (Lemcke & Buechner, New York), which all book-lovers familiar with the German language will want to see at least if they cannot become regular subscribers. The first number which has just appeared is replete with interest and a first class production in every way.

Julius Springer announces the completion of the seventh edition of the Neues Pharmaceutisches Manual by Eugen Dieterich. The same publisher calls attention to Krankenpflege, a handbook for nurses and families, by Dr. Julius Lazarus. The book is designed to give instruction in popular language to persons in charge of patients in order that the directions of the physician may be properly carried out.

R. Friedlaender & Sohn of Berlin have been commissioned with the distribution of Ueber giftige Eiweisse, welche Blutkoerperchen verkleben, by M. Elfstrand. After a brief review of abrin and ricin the author discusses his own work with the croton poison. The book is devided into a chemical and a pharmacological part. The examinations were conducted in the laboratories of Prof. Kobert in Dorpat, Prof. F. Hohngren in Upsala, and Prof. Schmiedeberg in Strassburg.

The Therapeutische Monatshefte for March review the Beiträge zur Dermatologie und Syphilis, a Festschrift dedicated to Georg Lewin in honor of the fiftieth anniversary of his doctor's examination. On Nov. 5, 1895, this was handed to the senior dermatologist of Berlin as a "Festgabe" from colleagues, friends and students. It contains the portrait of Lewin and 21 essays. On this side of the Atlantic we seem to have little time for such expressions of appreciation. As announced, Lewin has since died.

Monographien aus der Geschichte der Chemie is the title of a series of historic pamphlets to be published "in zwanglosen Heften" by Johann Ambrosius Barth. The editor is Dr. Georg W. A. Kahlbaum, professor at the University of Basel. The first Heft is to treat of the following subjects: Die Einführung der Lavoisierschen Theorie im besonderen in Deutschland; and Ueber den Antheil Lavoisier's an der Feststellung der das Wasser zusammensetzenden Gase. August Hoffmann is coauthor with the editor.

Less than two years ago the Lloyd Library building had to be enlarged to accomodate the rapidly growing library. Only a year ago the accomodations appeared liberal for a private library of considerable size. However, the growth has of late been such that an architect is now at work making plans for liberal extensions both to the front and by the addition of another story. Pharmaceutical and botanical students of this country have every reason to rejoice over the growth of this institution.

The chemical Publishing Co., Easton, Pa., calls attention to two works on applied chemical analysis: 1. Wiley's Principles and Practice of Agricultural Chemical Analysis, the third volume of which on Agricultural Products has been recently completed; 2. Engineering Chemistry: a manual of quantitative chemical analysis for the use of students, chemists and engineers, by Dr. Thomas B. Stillman, Professor of Analytical Chemistry in the Stevens Institute of Technology.

As announced last year new editions of Beilstein's Handbuch der organischen Chemie will be published by the German Chemical Society. The third edition still edited by Prof. Beilstein is nearing its completion. The announcement is now made that supplementary volumes are to be published in the near future and that a new edition will not be begun until 1905. Persons using Beilstein's work are urgently requested to notify the Secretary of the German Chemical Society,

Prof. P. Jacobson (Berlin, N W., Georgenstr. 35) of any inaccuracies or omissions that may have come to their notice. It is only through systematic cooperation that the best in this direction can be achieved.

Appleton's Popular Science Monthly for April contains the conclusion of Prof. Hodge's article on Experiments on the physiology of alcohol. One of the briefer yet interesting articles is that by Prof. M. Heim on Ants as the guests of plants, translated from the French. Spencer and Darwin by Grant Allen is republished from the Fortnight Review. Reversions in modern industrial life by Franklin Smith will be of interest to those pharmacists who are interested in some of the modern tendencies of their calling.

The Colorado Medical Library Association has, for some years, been accumulating, in connection with the public library of Denver, a valuable medical reference library. This library is supplemented by numerous private collections which, however, are at present not available to the medical public. The association is now to prepare a classified list of the works these private libraries contain, which will also indicate in whose office each book may be found, and at what hours readers may refer to it. This plan of cooperation certainly merits to be duplicated wherever possible, whether on a small or a large scale.

Catalogues received:

Lemcke and Buechner — New York. Monthly Bulletin of World-Literature. 1897. No. 2.

Gustav Fork—Leipzig. Catalogue of Inaugural Dissertations.

Catalogue of the U. S. Public Documents. No. 26.

Commercial.

As a logical sequence to the complete equipment of their pharmacological and bacteriological laboratory for the careful testing of their drugs and antitoxic serums Parke, Davis & Co. have obtained the services of Dr. H. O. Hare, Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia, as Consulting Therapeutist for their house.

Dr. C. T. McClintock and Dr. E. M. Hazleton, formerly of the University of Michigan, will continue to supervise the manufacture of bacteriological agents, to test pharmaceutical products, and to investigate the physiological action of new remedies. There researches are, hereafter, to be supplemented by the study of the clinical behavior of drugs and the indications of their use on the part of Dr. Hare.

Catalogues received:

Parke, Davis & Co. — Detroit. Complete Catalogue for 1897.

Fries Bros.—New York. Synthetical Perfumes.

Roessler & Hasslacher Chem. Co. — New York. No. 97. April 1897.

Allairee, Woodward & Co. — Peoria, Ill. April 1897.

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- Is the only perfect digestant.
- Digests every kind of food, albumen, fat, starch, cane sugar, reducing them to the exact conditions required for assimilation in the organism.
- Presents in physiological activity the digestive principles, active and embryo ferments, from all the digestive glands.
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Peptenzyme is far superior to any other preparation in the treatment of all disorders of the digestive organs. It promotes digestion, both by aiding and perfecting the process itself, and by stimulating the appetite and secretory functions through the absorption of the embryo ferments. It not only gives immediate relief, but aids in **curing** Dyspepsia, etc. Pepsin, as found in the market, is prepared only by chemical methods, and has consequently lost most of its physiological properties, and is of little service in aiding digestion.

Peptenzyme is prepared in three forms, Elixir, Powder and Tablets.

SAMPLES, LITERATURE AND DIET LEAFLETS UPON REQUEST.

REED & CARNRICK, NEW YORK.

SUPPLEMENT, JUNE 1897.

Scientific Institutions.

Verein d. Naturforscher und Aerzte.

The sixty-ninth meeting of German Men of Science and Physicians, Verein deutscher Naturforscher und Aerzte, will be held at Brunswick from the 20th to the 25th of September. There will be thirty-three sections as compared with the thirty at the Frankfurt meeting.

British Chemical Society.

At the meeting of the society Thursday evening, March 25, Professor Percy Frankland delivered the memorial lecture on Pasteur, extending over two hours. At the anniversary meeting, March 31, Professor James Dewar was elected president in place of the retiring president, Mr. A. Vernon Harcourt. Professor William Ramsay was elected vice-president. The total membership of the society is 2080, exclusive of 27 honorary foreign members. During the year 120 papers had been printed in the societies Journal and 56 in the Proceedings. From the financial statement made by the treasurer, Professor Thorpe, it is of interest that the Research-Account now has investments of 6,945 l., a donation of a thousand guineas from Mr. J. J. Austin having brought it up to that amount. Grants amounting to 308 l. were made during the year to various investigators.

Philadelphia College of Pharmacy.

It is reported that the vacancy caused by the death of Prof. Bastin is to be filled by Dr. Henry Kraemer and Dr. Clement B. Lowe. A division of the double chair is to be effected.

Henry Kraemer is a graduate of Girard College and of the Philadelphia College of Pharmacy. He acted for several years in the capacity of assistant in Philadelphia and New York. While in New York he studied botany at Columbia College. For several years he was Reporter on the Progress of Pharmacy for the Am. Pharm. Assoc. In 1895 he accepted the chair of Botany, Pharmacognosy and Materia Medica at the Northwestern School of Pharmacy with the privilege of spending a year abroad. This year was spent at Marburg with Prof. Arthur Meyer. Having taken his doctor's degree, he returned and during the past year he has been engaged in instruction at Chicago.

Clement B. Lowe, who is to teach Materia Medica and Physiology graduated from Buckwell in 1865. He then entered the Philadelphia Polytechnic College, but on account of ill health gave up his studies and purchased a drug-store in Philadelphia in 1867, which he conducted until about two years ago. In 1884 he graduated from the Philadelphia College of Pharmacy and was appointed assistant to Prof. Maisch in 1887, which position he also held under Prof. Bastin. Mr. Lowe is also a graduate of the Jefferson Medical College.

The Zoological Station at Naples.

On April 14 the Zoölogical Station at Naples celebrated the twenty-fifth anniversary of its foundation, and the Frankfurter Zeitung of March 24 and 25 anticipated this event by giving a bird's-eye view of the work done by that important aquarium and biological laboratory, which has served as a model to numerous similar institutions that have since sprung up in various parts of Europe and America as well as in Japan. It was at a time when the scientific experts were still hotly debating the numerous questions suggested by Darwin's theories, that it occurred to Dr. Anton Dohrn to found, somewhere on the Mediterranean, a laboratory where marine animals might be studied at home, as it were; his belief being that the sea furnished the most valuable specimens for biological research. He had considerable means of his own, and he added to them the profits of his public aquarium at Naples. These, however, did not suffice for carrying out his comprehensive plans, and he therefore appealed to the government and universities of various countries for assistance. Naples gave him a convenient location, while the Ministry of Agriculture at Rome contributed $8,000 and an annual subvention of $500. The German Government recognized the value of the Zoölogical Station in 1880 by voting to contribute $7,500 a year, which sum was in 1890 increased to $10,000. These funds are augmented by means of an ingenious arrangement with various states and universities by which, in return for $500 a year, any one can secure a "table" in the laboratory with all the privileges and conveniences it affords. Germany and her universities have 10 tables, Italy 9, Austria and Russia 2 each, Holland, Belgium, Hungary, Switzerland, Rumania, Bulgaria, 1 each, while others are held by the universities of Oxford, Cambridge, Columbia, the British Association, Smithsonian Institution, etc. The only state that ever gave up its table was Spain, which no longer felt able to pay for it.

The means for securing material for all these students are as ingenious as the financial arrangements. Two small steamboats are in the service of the Zoölogical Station, and $1,500 is yearly paid to the Naples fishermen at large, who have instructions to bring to the laboratory such contents of their nets as are not utilized in the markets. Not only do the managers in this way secure abundant specimens for use in the laboratory, but arrangements have been made for forwarding specimens to biologists in all parts of Europe, this being another source of income. The institution employs 11 officials and 30 assistants, and the number of students is about 40 in winter, 20 in summer.

Calendar of State Pharmaceutical Associations.

Name.	Date.	Place.	Secretary.
Colorado	June 22-24	Manitou	C. E. Ward, Denver.
Connecticut	June 15,16	Bridgeport	A. S. Clark, Waterbury.
Illinois	June 2 & 3	Champaign	F. Fleury, Springfield.
Indiana	June 1 & 2	Indianapolis	A. W. Timberlake, Indianapolis.
Iowa	June 9—11	Waterloo Chat'qua	A. H. Miles, Des Moines.
Kentucky	June 15	Crittenden Springs	J. W. Gayle, Frankfort.
Massachusetts	June 8—10	Plymouth	J. F. Guerin, Worcester.
Missouri	June 8—12	Meramec Highland	H. M. Whelpley, St. Louis.
Nebraska	June 7—9	Plattsmouth	W. S. Heilman, Tecumseh.
Ohio	June 9	Cleveland	S. C. Hopp, Cleveland.
Pennsylvania	June 22	Del. Water Gap	J. A. Miller, Harrisburg.

In Memoriam.

Dr. Edmund Russow, Professor of Botany and Director of the Botanical Gardens at the University of Dorpat, died April 11. His special department of research was anatomical botany. He was an honorary member of the British Pharmaceutical Society.

The May number of the Am. Journ. Pharm. contains a biographical sketch of Robert Shoemaker of Philadelphia, who died Dec. 17 of last year. He was born Feb. 2, 1817, in Shoemakertown, Montgomery Co., Pa., to which state his ancestors moved in 1683 at the invitation of William Penn. In 1831 Mr. Shoemaker became apprenticed to a druggist in Philadelphia, whose store he purchased in 1837, when but twenty years old. While preparing plasters, he at the request of Prof. Procter (1846) made glycerin which was sold at $4.00 per pound in 1848. The entire product sold in 1848 was 15 lbs. In 1849 Mr. Shoemaker made about 200 lbs., averaging about $2.70 per lb. The specimen given Prof. Procter was the first glycerin made in Philadelphia, if not in America.

Though not a graduate of the Philadelphia College, Mr. Shoemaker was an active member of that institution. He was not only successful in his chosen calling, but in other lines of business as well.

Professional Ethics.

Buchner versus Koch.

There seems to be a dramatic aspect to the exploitation of Koch's "new tuberculin." Dr. R. Romme calls attention to it in the Presse médicale for April 21st. In the Münchener medicinische Wochenschrift for March 23d Professor Hans Buchner, of the Munich Hygienic Institute, published an article entitled Die Bedeutung der activen löslichen Zellproducte für den Chemismus der Zelle, in which he mentioned the researches of his brother, Professor Eduard Buchner, of the University of Tübingen, who found that by triturating the cells of beer yeast with sand and expressing the mixture under a pressure of from four to five hundred atmospheres he obtained a yellow liquid, clear or slightly opalescent, devoid of cellular elements, and having the remarkable property of inducing the alcoholic fermentation. From this fact Hans Buchner concluded that the agent of the alcoholic fermentation was not the beer cell itself, but a substance contained in its plasma, a zymase. This was in support of his theory of alexins. He added that some of his pupils, by means of a similar mechanical process of trituration, had extracted from the *Bacillus pyocyaneus*, from cholera spirilla, and from tubercle bacilli a liquid which seemed to have immunizing properties, but that the investigations were not yet finished.

Three days after the date of the Munich journal in wich Buchner's article appeared, the telegraph announced Koch's discovery to the world, and in a few days more, on April 1st, Koch's article on his "new tuberculin" appeared in the Deutsche medicinische Wochenschrift, but the article was dated November 14, 1896. Thereupon, in an editorial note in its issue for April 6th, the Münchener medicinische Wochenschrift called attention to the identity of Buchner's and Koch's processes and to the almost simultaneous publication of their articles. It asked if the appearance of Koch's article, a week later than that of Buchner's, had not been managed for the purpose of making it impossible for Buchner to set up a claim of priority, especially as Koch's article was dated back in November.

In a communication entitled Zu Robert Koch's Mittheilung über neue Tuberculinpräparate, published in the Berliner klinische Wochenschrift for April 12th, Buchner hints a plagiarism on the part of Koch, and says that in 1893 his brother Eduard proposed to the house of Meister, Lucius & Bruning to take out a patent for his trituration process of extracting the active principle from yeast. He says, further, that the application for the patent was denied, but not until the description of the process had remained open in the patent office for several months; that the description was finally published by Eduard Buchner, in January, 1897, in the Reports of the German Chemical Society, and that in that article Eduard said that Hans was at the time employing the same process for extracting the juice from pathogenic bacteria. Hence, Hans Buchner contends, Koch can not claim priority over him.

The Ethics and Economics of Proprietary Preparations.

Dr. Charles Rice, a member of the Committee of Revision of the United States Pharmacopœia and the chemist of the New York department of public charities, has lately thrown a good deal of the light of common sense on the question of the advisability of using proprietary preparations says the N. Y. Med. Journ. What he says is in the form of a report to the committee on the apothecary's department of the medical board of Bellevue Hospital, made in compliance with a request from that body. The report was adopted by the medical board on April 1st, and has been approved by the board of commissioners.

Dr. Rice defines a proprietary article as one of which some person or persons have exclusive control of the production, sale, or use — of all three of these features in some cases, of one or two of them only in others. He divides such articles into natural and artificial products, and again into these three classes: 1. Products of nature prepared under patents and mostly sold under copyrighted names. 2. Products of nature that have never been made under patents or are no longer so made, but are sold under copyrighted names. 3. Artificial preparations sold under copyrighted names. As regards patented articles, it is a principle in patent law, says Dr. Rice, that a product of nature can not be patented; hence no patent is granted on any chemical substance of a definite and constant composition, even though it may, at the time when the patent is applied for, not yet have been found occurring ready-formed in nature. But any process, not previously known or used, by which such a product can be formed is patentable. Certain articles that are made by patented processes may also be made by processes that are not patented, and, as it is impossible for the purchaser to distingnish by which process they have been made, nobody, says Dr. Rice, would think of raising any objection against their use in medicine. As an example, he mentions salicylic acid, which, in the form of methyl salicylate, exists in oil of wintergreen and some other volatile oils, from which the acid may readily be prepared; but, as

these oils would be utterly inadequate to supply the demand, more than ninety-five percent. of the salicylic acid used in medicine is produced by a process that was patented in 1874, but on which the patent has now expired. A patent, says Dr. Rice, not only does away with all secrecy—which is usually considered the objectionable feature of a proprietary article—but it commonly acts also as a sort of guarantee of the uniformity of the product in composition, strength, and purity.

Dr. Rice thinks that if all these points are taken into consideration, it will probably be conceded that, if an article is protected by a patent alone—the feature of a copyrighted name being disregarded—it becomes practically impossible to separate patented substances into classes of which one may and the other may not be used without a violation of ethics, and therefore none of these articles should be rejected for the reason alone that they are patented. He then proceeds to concider the three classes of proprietary articles previously mentioned.

As to products of the first class, inasmuch as copyrights on names never expire, whereas a patent has a definite term of years to run, it is evident, says Dr. Rice, that the proprietors of the copyrights would have a perpetual monopoly unless, after the expiration of the patents, other producers shou'd put the same articles on the market under new names not copyrighted. All these bodies—such as antipyrine, aristol, phenacetine, salol, salophene, sulphonal, trional, and vanillin (the last-named substance being now sold only under its proper chemical name)—will undoubtedly, Dr. Rice thinks, be rescued from their present monopolistic control when the patents on them have expired. There is no secret whatever about them, he says. They are definite chemicals of known composition and properties, and, since some of them have been found to have real therapeutical value, no objection, it is believed, will be raised against the whole class.

Dr. Rice next considers the products of nature which have never been or are not now made under patents, but are sold under copyrighted names, familiar examples of which are antifebrine (acetanilide), dermatol (bismuth subgallate), formalin or formal (formaldehyde), pyrozone (hydrogen-dioxide solution), diuretin (sodium-theobromine salicylate), and lanolin (hydrous wool fat). The owner of the copyrighted name, he remarks, usually professes that his product is "purer" or "more refined" than the article found on the market under the common name, and this pretension, he says, is true in some instances, particulary in those of articles first put on the market under copyrighted names, although at present the best grades of the several articles sold under their common names appear to answer every purpose. These products, he thinks, are unobjectionable, but he says it seems preferable, as it is certainly more economical, to order them under their common names, especially acetanilide, bismuth subgallate, and formaldehyde.

His third class, preparations that are not products of nature, sold under copyrighted names, Dr. Rice divides into three groups. The first group, which he considers unobjectionable, comprises preparations the origin and composition of which are not kept secret, such as ichthyol, creolin, Mellin's food, malted milk, etc. The second group, which he thinks to be of doubtful value, includes all the preparations of the class that do not belong to either the first or the third group, which last, by far the largest, consists of the "secret nostrums," such as "soothing syrups," "female regulators," "blood-purifiers," etc.

Bibliography.

The second edition of Guenther's Handbuch der Geophysik is about to appear in 10 Lieferungen. It is published by Ferdinand Enke of Stuttgart.

Longmans, Green & Co. have a new edition of Mendeléeff, The Principles of Chemistry, in the press. It is translated by George Kamensky of St. Petersburg and edited by A. J. Greenaway.

Manipulations de Chémie by L. Étair, Chef des travaux chimiques à la Faculté des sciences de Paris; and Traité élémentaire de Chémie biologique, pathologique et cliniqne by R. Engel, Professor at the École Centrale, and J. Moitessier, associate Professor of Chemistry of the Faculty of Medicine at Montpellier, are two new books published by J. B. Baillière Fils of Paris.

A. Hartleben of Vienna calls attention to volume one of a new three volume work on Angewandte Elektrochemie by Dr. Franz Peters; also to Handbuch der Mass-Analyse by Dr. Wilhelm Bersch. The first constitutes vol. 47, of the Elektrotechnische Bibliothek by the same publisher.

Elements of Chemistry by Rufus P. Williams, Instructor in Chemistry of the English High School, Boston, is to be ready this month, whereas An Introductory Course in Quantative Analysis by Percy N. Evans, Associate Professor of Chemistry in Purdue University, is in course of preparation. Both books are published by Ginn & Co.

Julius Springer announces as in the press the following works in the third edition of Analyse der Fett- und Wachsarten by Prof. Dr. Rudolf Benedikt; Anleitung zur chemisch-technischen Analyse, for the use of university and college laboratories, by Prof. F. Ulzer and Dr. A. Fraenkel; Anleitung zur quantitativen Bestimmung der organischen Atomgruppen by Dr. Hans Meyer.

The Hausschatz des Wissens is a library of science, art and history published by J. Neumann and edited by a number of specialists. It is written in a popnlar-scientific style and highly illustrated. Volume seven, dealing with the vegetable kingdom, is reviewed on p. 123. Volumes 3 and 4, constituting a treatise on physics, vol. 5 on chemistry, vol. 6 on the mineral kingdom and vols. 10 and 11 on Länder- und Völkerkunde are in preparation. Although each division constitutes a unit by itself, the entire series will be provided with a general index given free of charge to the purchasers of the entire collection. It is intended that from three to four volumes shall appear annually.

Catalogues received:

Librairie J. B. Baillière et Fils—Paris. Nouvelle publications. May 1897.

Martin Boas—Berlin. Katalog No. 31 des medicinischen Antiquariats. 1897.

Ginn & Company—Boston. Catalogue and Announcements. 1897.

A. Hartleben's Verlag—Vienna. Nachtrag vom Jan. 1896 bis Dec. 1897; Verzeichniss von gewerblicher und technischer Fachliteratur, Chemisch-technische Bibliothek.

Lemcke and Buechner—New York. Monthly Bulletin of World Literature. 1897, No. 3.

Longmans, Green & Co.—New York. Reference works and text-books in Chemistry.

Commercial.

Production of Iodine.

According to the C. & D. the Iodine Syndicate have been more than usually troubled of late with the arrival on the London market of parcels not controlled by them. New iodine works have lately been started in Norway and in Japan, and the number of free iodine producers on the west coast of South America is also increasing every year. Japan, which has until recently been the chief customer for European iodides, has begun to manufacture those preparations for herself from iodine recovered from the algæ that abound on her coasts. With her abundance of low-priced labor Japan will, in all probability, not only succeed ere long to free her home market from the foreign article, but she may begin to export iodine, and even iodine preparations, to Europe and America. Small isolated consignments of such goods have, in fact, already made their appearance in the British market. When the new Japanese industry began to assert itself about a year ago, the European makers made great effort to crush it and keep the Japanese market to themselves by reducing their prices. The Japanese makers, however, proved to strong for them, and at the present time that once important outlet may be regarded as a lost market.

According to our dailies the new Secretary of Agriculture has suggested the manufacture of iodine from algæ as a new industry for this country. At present this appears more like a politicial effort to secure better times on paper than like a fact to be accomplished.

Reports and Catalogues received:

Fritzsche Brothers—New York. Semi-annual report of Schimmel & Co. April 1897. Pamphlet, pp. 120.

Gehe & Co.—Dresden-Neustadt. Handelsbericht, April 1897. Pamphlet, pp. 86.

Heinrich Haensel—Pirnaa.d.Elbe. Bericht über das erste Vierteljahr 1897. Pamphlet, pp. 31. Extract from quarterly report on essential oils and fruit essences. April 1897. Pamphlet, pp. 23.

E. Merck—Darmstadt. Annual report on the year 1896, published in March 1897. Pamphlet, pp. 187.

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SUPPLEMENT, JULY 1897.

Scientific Organizations.

Calendar of State Pharmaceutical Associations.

Name.	Date.	Place.	Secretary.
Maine	July 6	Portland	M. L. Porter, Danforth.
Maryland	July 14-16	Ocean City	Henry Maisch, Baltimore.
New York	July 13-16	Manhattan Beach	J. D. Todd, Ithaca.
South Dakota	July 20-22	Sioux Falls	I. A. Keith, Lake Preston.
Tennessee	July 21	Nashville	R. W. Vickers, Murfreesburo.
Michigan	Aug. 3	Lansing	Ben. Schroeder, Grand Rapids.
Minnesota	Aug. 23-24	Lake Minnetonka	C. T. Heller, St. Paul.
Wisconsin	Aug. 10	Green Bay	E. B. Holmstreet, Janesville.
New Hampshire	Sept 7 & 8	Manchester	F. L. Way, Manchester.
Oregon	Sept	The Dalles	A. W. Allen, Portland,
South Carolina	Nov. 14	——	J. A. Barbot, Charleston.

Bureau of Weights and Measures.

The biennial session of the International Committee on Weights and Measures* was held in the Pavillon de Breteuil, April 13, under the presidency of Professor Foerster of Berlin. The other foreign members present were Arndtson of Christiania, v. Bodola of Budapest, Chaney of London, Hirsch of Neuchâtel, Hepites of Bukarest, v. Lang of Vienna, de Macedo, the Portugese ambassador, and Mendeleeff of St. Petersburg. According to the Chemische Rundschau, the bureau submitted several very interesting dissertations: one on the exact determination of the normal measures of the centimetre and millimetre by the Director Benoyt; another on the discovery of a new alloy of iron and nickel by Dr. Charles Guillaume of Neuchâtel. This new alloy expands less than any of the known metals or alloys (1/10 of that of platinum) and consists of 36 parts of nickel and 64 parts of iron. For measuring apparatus and machines, which are exposed to changes in temperature, this discovery is of great importance.

University of Nancy.

It is reported (C. & D.) that the well-known manufacturers, M. M. Solvay & Co., have donated the sum of 100,000 francs to assist in the development of the chemical institute. An iron-works has given 10,000 fr., two glass-manufacturers have sent similar sums, and smaller amounts have also been contributed. It would seem that French manufacturers, like the English, are realizing the necessity of live scientific institutes such as Germany has long possessed.

According to the Ph.-Ztg., Nancy is to have a physico-chemical laboratory, established by the municipality, which will give especial attention to electrical subjects. Manufacturers in the north-eastern part of France are reported as being enthusiastic over the project and as having subscribed liberally as indicated above.

* For general information about this committee and the Pavillon de Breteuil see p. 97 of vol. 14 of this journal.

Pharmaceutical Society of Great Britain.

The 56th annual meeting of this society, which represents the commercial and general professional interests of British pharmacy, but leaves pharmaceutical science to the Pharmaceutical Conference, met in the month of May. On account of the character of this association its deliberations are naturally principally of local interest. The order of business of greatest interest was the one which involved a rise in the examination fees. It was carried. There are only a few organizations in this country which stand in similar relation to the communities they represent.

Catalogues received:—

Philadelphia College of Pharmacy—Seventy-seventh announcement.

University of Iowa—Iowa City. Thirteenth annual announcement of the Department of Pharmacy. 1897–98.

University of Wisconsin—Madison. Catalogue for 1896–97.

Vanderbilt University—Nashville, Tenn. Announcement of the Department of Pharmacy for 1897–98.

History.

Some Historical Traditions about Gun Powder.

Prof. W. Le Conte Stevens of the Rensselaer Polytechnic Institute in an article on the Evolution of modern heavy gun in the June Popular Science Monthly makes the following statements about the discovery of the well known explosive:—

There is no probability that we will ever learn definitely the true history of the invention of gun powder. Quite probably it was independently invented by different persons at different times. There can be little doubt that the knowledge of its composition existed at a very early date among some of the inhabitants of India, where the rich soil under a tropical sun has during many centuries been leached for the purpose of procuring niter. Assuming the presence of this salt in abundance, it would hardly be possible for one who handles it to remain long ignorant of its capacity to explode when sufficiently heated in contact with charcoal, sulphur, or any other kind of fuel. It is not surprising that some of the earlier alchemists should be credited with the preparation of gun powder. It has been common to attribute its invention to Roger Bacon, whose life lasted through the greater part of the thirteenth century. But his language is characteristically vague; for, in regard to the mixing of saltpeter with sulphur and another undefined substance, he merely says: "You will thus make thunder and lightning if you know the method of mixing them."

Another claimant to the invention of gun powder was the German monk, Berthold Schwartz, who is said to have ground together in a mortar a mixture of niter, charcoal and sulphur. Accidentally allowing fire to come in contact with the mixture, an explosion ensued.

The pestle was projected from the mortar and from the hand of the surprised alchemist. This suggested the use of the uncanny substance for military purposes, and the mortar was subsequently made on a larger scale for the special purpose of propelling projectiles.

The determination of the proper percentages of niter, carbon and sulphur in gun powder implies a knowledge of the quantitative laws of chemistry. It is not to be supposed, therefore, that the earlier users of this explosive were able to make powder equal in quality to that of modern times, or that they knew how to adjust its granulation to the special purposes intended under varying circumstances. The Saracens seem to have introduced it into Spain for pyrotechnic purposes about the same time that Schwartz made his suggestion regarding its most important practical application. Its first definitely known use was for cannon. These were called "bombards," on account of the noise occasioned by firing.

In Memoriam.

K. R. Fresenius.

Karl Remigius Fresenius, the nestor of analytical chemistry, is reported to have died in the night from the 10th to the 11th of June, evidently at his home in Wiesbaden.

He was born on the 28th of Dec., 1818, in Frankfurt on the Main. In 1836 he entered pharmacy and at the same time the Senkenbergische Institut in Frankfurt. Later he studied chemistry at Giessen, became Liebig's assistant in 1841 and in 1843, at the age of 25 became Privotdocent. In 1845 he went to Wiesbaden as Professor of Chemistry at the Agricultural Institute. Three years later (1848) he established his own Chemical Laboratory, which soon became world famous. In 1862 a pharmaceutical department, in 1868 an agricultural-chemical department, and later departments of bacteriology and hygiene were added.

As early as 1842, while in Liebig's laboratory, he began his active literary career with his Anleitung zur qualitativen chemischen Analyse. His books on analytical chemistry are too well and too universally known to require comment. The Zeitschrift für analytische Chemie, established by him in 1862, is probably somewhat less generally known. With the death of Fresenius a remarkable character has stepped off the chemical arena. His sons evidently intend to continue his work.

Emily L. Gregory.

Dr. Emily L. Gregory, who died April, 21, 1897, was one of the first American women to receive the degree of Doctor of Philosophy from an European university. She was born Dec. 31, 1841. She received her preparatory education at Albion Seminary and her collegiate education at Cornell University, from which institution she graduated in 1881. Two years later, she went abroad to study, spending two years at Strassburg and the following one at Zürich. At the latter place, she received her degree in 1886. Dr. Gregory was two years (1881–1883) at Smith College as teacher of botany. The next year she had charge of the botanical laboratory at Harvard Annex. After her return from Europe she was two years at Bryn Mawr as associate in botany, after leaving there she was at the University of Pennsylvania a few months. In 1889, she was appointed instructor in botany in Barnard College, in which institution she remained until the time of her death, having been promoted to the rank of full Professor of Botany in 1896. Without doubt, Barnard College owes much of its success to her attractive personality.

Julius von Sachs.

The man who has filled perhaps the most prominent position among the world's botanists of the present time, Julius von Sachs, died on the 28th of May at Würzburg at the age of 65 years.

Prior to his times, botany had found its chief development along systematic and anatomical lines, the problems of plant physiology having received but a limited notice. Sachs may be said, well nigh single handed to have turned the drift of continental botanical research from these traditional courses, mainly through his Handbuch der Experimental-Pflanzenphysiologie, published in 1865. It is probable that Sachs' attention was directed to this line through his early training in animal physiology, received under the great anatomist and physiologist, Purkynje, during his service in the University of Breslau. When in 1850, his teacher was called to Prague, Sachs went with him as his private assistant. Thus equipped with the best physiological methods and ideas of the time, Sachs turned to botany, more especially to the physiology of plants, and, by a series of remarkable treatises did much toward placing our knowledge of the vital phenomena of plants on a scientific basis. In 1868, his Lehrbuch der Botanik appeared, the highest authority of its day and still indispensible to the botanist. In 1882, his Vorlesungen über Pflanzenphysiologie was published. In this work was summarized the most important physiological knowledge, not a small part of which, he himself had gained.

Not only in pure botany has Sachs won the gratitude of all students in the biological sciences. His Geschichte der Botanik brought down to almost 1860 is no mere chronicle of the progress of the science. It is a deeply philosophic discussion of causes operative and must ever remain a classic in its field.

Sachs was born in 1832 in Breslau. In 1859, he entered on his career as a teacher. At first assistant in Tharandt, he was called in 1861 to Poppelsdorf as professor, in 1867 to Freiburg. In 1868, he accepted the responsible station at Würzburg of Professor of Botany, and of Director of the Botanical Institute, of the Botanical Garden and of the Herbarium, in which capacity he served until his death.

Ernst Jahns.

On April 17. Ernst Jahns, apothecary in Goettingen, died at the age of but 53. Though he was in the practical pursuit of his calling, yet the deceased found it possible not only to follow the progress in our science, but also to furnish valuable contributions by original research. His work furnishes a good illustration, showing that even at the present time valuable scientific results are attainable with moderate experimental resources, if only the right love of science is at work. The following biographical notes were received by the secretary of the German Chemical Society from a friend.

Jahns was born Feb. 27, 1844, at Hannover. After attending the gymnasium there, he served his apprenticeship until 1863 with the Berg-Commissär Hildebrandt in Hannover. While with this man of general knowledge, Jahns laid a good foundation in chemistry and botany, upon which he continued to build during the following years in service. Jahns received special incentives to botanical studies during a stay of some length of time at the Staats-Apotheke in Bern, which was then conducted by that excellent pharmacognoist Flückiger. During 1867 and 1868 Jahns studied at Goettingen and there in 1873 he acquired the University Apotheke, in which he had been an apprentice some years before.

In the laboratory of this Apotheke we find him until recently untiringly and successfully engaged in experimental investigations of plant substances, the results of which he reported partly in the Archiv der Pharmacie and partly in the Berichte d. d. Chemischen Gesellschaft.

In one of his first investigations he discovered the presence of carvacrol in origanum oil or "Cretisch-Dostenöl", which, as is known, is to-day the most abundant source for the derivation of that phenol; to our knowledge of volatile oils he also contributed later by his investigation of thuja oil and eucalyptus oil, in which latter investigation he shows the identity of eucalyptol with cineol. He made an excellent investigation of the constituents of galanga root; showing that what had been considered as one substance under the name of kämpferid, is a mixture of three, naming them kaempferid, galangin and alpinin, and characterizing them in a model manner. However, the best fruits of his scientific labors were born in the field of the alkaloids. In 1885 he discovered trigonelline in fenugreek; two years later he reports that he finds this base to be identical with the methylbetaïn of nicotinic acid, discovered by Hantsch shortly before. During the last years he was principally engaged with the alkaloids of the areca nut. In his work upon these problems it is plainly discernible how Jahns continued to perfect himself in the use of chemical methods. Here also he was successful, by exact observation and fortunate combination, in completing the analytical investigation of the most important constituent, that of arecoline, finding the base to be N-methyltetrahydronicotinic acid-methylester.

Besides his business pursuits Jahns did not only find time for the above mentioned comprehensive chemical investigations, but also continued to preserve interest in botany. An excellent and very extensive herbarium, to which he had never ceased to add, will serve as evidence for this.

Bibliography.

Julius Springer announces as just out a work by Dr. C. S. Schleich, entitled Schmerzlose Operationen: örtliche Betäubung mit indifferenten Flüssigkeiten; Psychophysik des natürlichen und künstlichen Schlafes.

The same publisher announces the completion of Der Verkehr mit Arzneimitteln und Giften ausserhalb der Apotheken by Dr. Franz Nesemann. Although this work may be of little interest to the average American, those, who are at present interested in the nationalization of pharmaceutical legislation or in the revision of state pharmacy laws may find useful information.

The early editions of Rammelsberg's Leitfaden für quantitative Analyse were reviewed in the older volumes of this journal. The fifth revised or rather "gänzlich umgearbeitete" edition by Prof. Carl Friedheim has appeared under the title Leitfaden für die quantitative chemische Analyse and includes volumetric analysis, gas analysis and electrolysis. The publisher is Carl Habel of Berlin.

The Zeitschrift für angewandte Mikroskopie, the first volume of which was reviewed on p. 240, vol. 14 of this journal, is published by Carl Steinert of Weimar since April of this year. The editor is G. Marpmann.

The sixth edition of the Inorganic Chemistry of Gmelin-Kraut's Handbuch der Chemie has recently been completed. It is edited by Prof. Dr. A. Hilger with the aid of several collegues. A complete alphabetical index is in preparation. It is published in Carl Winter's Universitätsbuchhandlung in Heidelberg.

Dr. Faber has compiled a handbook entitled Schutz, Hilfe und Beistand. It is a popular treatise and treats 1) of the anatomy of the human body; 2) of first aid to the injured; 3) of maternal duties and the treatment of infants; 4) of house gymnastics for the healthy and invalids. It is published by Geo. Brumder of Milwaukee.

The Zeitschrift für Bücherfreunde contains the following notice of interest to pharmacists, whether bibliophiles or not: — Among the numerous curiosities recently sold at auction in Paris there was a small volume bound in an Italian renaissance cover and bearing the code of arms of Katharine de Medici. It is a medico-chemical tract dealing with the preparation of poisons. Those paragraphs giving information about the means by which a human being could be expedited quickly to another world, were underlined and provided with glossaries in an old handwriting. Whether the handwriting was that of the queen or not, could not be determined.

The Pharmacologist is a new quarterly published by Frederick K. Stearns of Detroit and "devoted to the consideration of drugs from scientific and commercial points of view." The journal, is, no doubt, unique in the distinction it makes between scientific and commercial. For the scientific department it will receive contributions "from both professional and trade sources, whether the contributor is interested financially in the subject or not, so long as they treat of drugs and preparations not restrained from general use by patents, so-called trade-marks, or secret methods of manufacture." For the commercial department the publisher solicits "communications concerning drugs and preparations restrained from general use by trade methods." Whatever ethical view may be taken of such preparations, the fact must be recognized that they are extensively used and that physician and pharmacist want to be informed with regard to them. Inasmuch, however, as

the manufacturer is financially benefited by spreading such information, he is expected to bear a part of the expense of publication. In other words, the articles of this department are unveiled reading notices. This is certainly honest, even if deplorable from the standpoint of those who are trying to change the views of the medical and pharmaceutical professions with regard to patents. Aside of the intrinsic value of the information contained in this journal, its development will be of interest to many thinking persons.

Catalogues received:—

Lemcke & Buechner—New York: Monthly Bulletin of world-literature. 1897, No. 4.

Commercial.

Profits of German Chemical Manufacturers.

The following annotation is from the P. J.: The Farbenfabriken (Friedrich Bayer & Co.), of Elberfeld, made a profit last year of $1,334,000.00 and has just paid a dividend for the year of 18 p. c. The Badische Anilin- und Soda-Fabrik of Ludwigshafen, on the Rhine, had a profit of $2,004,690, and has distributed 26 p. c.; and Messrs. Meister, Lucius & Bruening, of Hoechst a. M., came out with $1,707,775 to the good, and have been enabled to return 28 p. c. These several results were accomplished in spite of injury done by the presidential election in America and by the famine and plague in India.

No one can be surprised at the ever increasing business of these German firms who has made acquaintance with their murderous energy etc. They employ large staffs of highly trained chemists who spend their time on novelties and the improvement of existing products. It is stated that Germany sent to the United States during the twelve months ending last June 9,763,000 lbs. of alizarin against 308,743 lbs. sent by England, while of coal-tar colors and dyes the imports from Germany were valued at $2,324,157, and those from Great Britain at $191,263.

Catalogues and Pamphlets received:—

C. F. Boehringer & Soehne—New York. Ferratin. Pamphlet, pp. 16; Lactiphenine, or lactyl-para-phenetidine, an antipyretic, analgesic and sedative. Pamphlet, pp. 16.

Lehn & Fink—New York. Facts relative to the treatment of diseases of the upper air passages. By Dr. H. L. Armstrong. Pamphlet, pp. 6.

Parke, Davis & Co.—Detroit. Bacteriological products from the biological department. —— Prices current: Bacteriological and biological products.

Roessler & Hasslacher Chemical Co.—Price list, May 1897.

E. Schering—Berlin. Eucaine A, a new local anaesthetic. Pamphlet, pp. 24.

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SAMPLES, LITERATURE AND DIET LEAFLETS UPON REQUEST.

REED & CARNRICK, NEW YORK.

SUPPLEMENT, AUGUST 1897.

Universities and Colleges.

University of Michigan.

At the fifth-third annual commencement, Thursday July 1., the degree of Pharmaceutical Chemist was conferred upon 21 candidates and that of Bachelor of Science in Pharmacy upon three. The honorary degree of Master of Pharmacy was conferred upon Maurice A. Miner, Ph. C. of the class of 1871.

University of Wisconsin.

The special exercises of the School of Pharmacy were held Monday evening, June 21. The principal features of the program were an address by Dr. Wm. Trelease on Medical and Pharmaceutical Botany; and the presentation of the portrait of Dr. F. B. Power on part of the pharmaceutical alumni who studied under him during the years 1883—1892. Dr. Trelease was Professor of Botany at the University when the School of Pharmacy was established in 1883, but since 1885 has been Director of the Missouri Botanical Garden at St. Louis.

Chicago College of Pharmacy.

This college which a year ago affiliated itself with the State University of Illinois makes the following special announcement:—The degree of Pharmaceutical Chemist will be conferred as heretofore, but for a more extended course, the details of which will be announced later. In conformity with the common usage of schools of pharmacy, drug-store experience will not be required for this degree.

Northwestern University School of Pharmacy.

The chairs vacated by the resignations of Professors Kraemer and Nagelvoort are to be filled respectively by Dr. Albert Schneider and by Mr. David S. Davoll.

Dr. Schneider was born in 1865 and received his college education at the Universities of Minnesota and Illinois and at Columbia University, the last conferring upon him the doctor's degree. He had also graduated in medicine in 1887. His special field is general botany, but during the past year he has also given attention to pharmacognosy having made a series of histological studies for one of the research committees of the U. S. P. Revision Committee.

Mr. Davoll is a graduate of the University of Michigan. For two years he acted as assistant at Ann Arbor and then for a year in the research laboratory of Parke, Davis & Co. A year ago he returned to Ann Arbor as instructor. His postion in Chicago will be that of Assistant Professor of Applied Pharmaceutical Chemistry.

Catalogues received:—

Brooklyn College of Pharmacy—Seventh annual announcement. 1897—98.

Chicago College of Pharmacy—Thirty-eighth annual announcement. 1897—98.

College of Pharmacy of the City of New York —New York. Prospectus 1897—98.

Eclectic Medical Institute — Cincinnati. Fifty-third annual announcement 1897—98.

Massachusetts College of Pharmacy—Boston. Thirty-first annual announcement.

National College of Pharmacy — Washington, D. C. Twenty-sixth annual circular, session of 1897—1898.

Northwestern University School of Pharmacy —Chicago. Circular of information for 1897—98.

Ontario College of Pharmacy—Toronto, Canada. Annual announcement, 18th session. 1897—98.

University of Iowa Department of Pharmacy, Iowa City. Thirteenth annual announcement 1897—98.

University of Michigan School of Pharmacy— Ann Arbor. Annual announcement and register of alumni. Thirtieth year, 1897—98.

The Pharmaceutical Era—New York. The Era course in pharmacy.

Scientific Societies.

International Congress on Technical Education.

This congress was opened at the Society of Arts, Adelphi, on Tuesday, June 15, the Duke of Davonshire presiding, after M. Léo Saignet, the retired President, formally gave up his office. The Duke of Davonshire explained that the meeting of the congress in London was due to the Society of Arts and to the city companies, which had guaranteed the needed expenditure. He then dwelt on the benefit to be derived from such gatherings and on the changes English education had undergone due to continental influences.

Prof. O. N. Witt read the first paper in which he advocated a thorough grounding in pure chemistry as the best training for future work. Prof. H. E. Armstrong read a paper on an allied subject, and Dr. J. H. Gladstone followed with one on teaching chemistry in continuative evening schools, stating that in Manchester there were arrangements for 12,451 pupils at evening schools, and that 2,738 are attending practical chemistry laboratories. Prof. G. Lunge, in a paper, stated that to raise Englich chemical industry to the foremost rank, it was necessary that the technical management of chemical factories should not be left in the hands of rule-of-thumb men, but should be entrusted to real chemists. These men should have a much fuller education than the majority of chemists seem to obtain in Great Britain at present. To him it also seemed a great waste of time and means to give some superficial chemical teaching to tens of thousands of workmen on the remote chance that one might have some real benefit of it.

Calendar of State Pharmaceutical Associations.

Name.	Date.	Place.	Secretary.
Michigan	Aug. 3	Lansing	Ben. Schroeder, Grand Rapids.
Minnesota	Aug. 23-24	Lake Minnetonka	C. T. Heller, St. Paul.
Wisconsin	Aug. 10	Green Bay	E. B. Heimstreet, Janesville.
New Hampshire	Sept 7 & 8	Manchester	F. L. Way, Manchester.
Oregon	Sept	The Dalles	A. W. Allen, Portland,
South Carolina	Nov. 14	——	J, A. Barbot, Charleston.

History.

Percolation.*

We observe that the American Druggist claims for the United States the credit of first making percolation an official process—viz., in the 1840 edition of the U. S. P., published in 1842. This is how our contemporary puts the matter finally:—

The early introduction and the general utilisation of percolation into the Pharmacopœia of the United States, and the excellent and exhaustive study given the process here, surely justifies the claim that percolation, as now practised, should be looked upon as a distinctly American process, though, so far as we are aware, it is a French invention.

It is a common but quite erroneous notion, that percolation is "a distinctly American process". American pharmacists have written a lot about it, but they must give the palm to Scotchmen for being the first to recognize its utility and make it an official process. In the Edinburgh Pharmacopœia of 1840 (published in 1839) the process was officialized under tinctures in the following terms:—

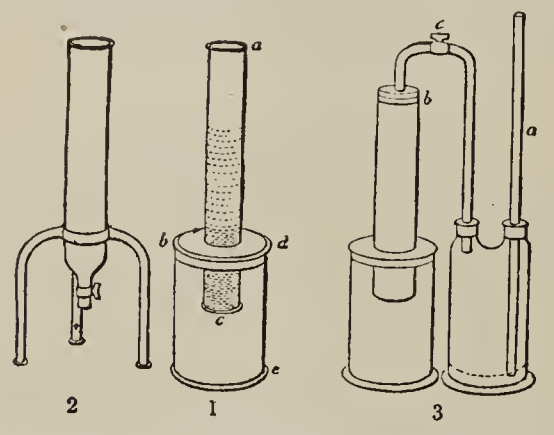

Fig. 1, percolator as contemplated by the Edinburgh Pharmacopœia, covered with calico at *c* and fitted into the jar, *e*, with cork or wooden lid, or the percolator may have attached to it the broad rim, *b d*. "It is sometimes advantageous," says Christison, "to contract the lower end so as to admit of a stop-cock on it, fig. 2." The percolator fig. 3 was for pressure-percolation, mercury being poured into *a* when the operation was started.

"A much superior method has been lately introduced, which answers well for most tinctures—namely, the method of displacement by percolation. According to this process, the solid materials, usually in coarse or moderately fine powder, are moistened sufficiently with the solvent to form a thick pulp. In twelve hours, or frequently without any delay, the mass is put into a cylinder of glass, porcelain, or tinned iron, open at both ends, but obstructed at the lower end by a piece of calico or linen, tied tightly over it as a filter; and the pulp being packed by pressure, varying as to degree with various articles, the remainder of the solvent is poured into the upper part of the cylinder, and allowed gradually to percolate. In order to obtain the portion of the fluid which is kept in the residuum, an additional quantity of the solvent is poured into the cylinder until the tincture which has passed through equals in amount the spirit originally prescribed. [The displacing of the residual spirit by water is then described.] The method by percolation, where applicable, will be found much more convenient and expeditious than the mode hitherto commonly followed; and it exhausts the matters in general much more completely. As considerable practice, however, is required for managing the details in different cases, more especially in regard to the degree of minuteness in the division of the solids, and the degree of firmness with which they are to be packed in the cylinder, we have thought it right to direct that the method by maceration may be employed as an alternative. But the method by percolation is now preferred by all who have made sufficient trial of it to apply it directly."

This reads like an extract from a modern American manual of pharmacy. There is every reason why the Edinburgh Pharmacopœia should have been the first to adopt the process; Scotch brewers had long used it under the term "sparging," and when Boullay and his son published their papers on displacement applied to the exhaustion of drugs in 1833—34, the Edinburgh College recognized the appropriateness of the process for medicinal purposes. Christison (Dispensatory, 1842) gives the preceding sketches of percolators and a very full description of the process. The Edinburgh Pharmacopœia named the tinctures which could not conveniently be prepared by percolation, as well as those which could be. We need name the latter only:—

Aurantii	Cinchon. co.	Lactucarii
Buchu	Cinnamomi	Lobeliæ
Calumbæ	Cinnam. co.	Lupuli
Cantharidis	Colchici sem.	Myrrhæ
Capsici	Conii fol.	Quassiæ co.
Cardamomi	Croci	Rhei
Card. co.	Cuspariæ	Scillæ
Cascarillæ	Digitalis	Sennæ co.
Cassiæ	Gallarum	Serpentariæ
Castorei	Gentian. co.	Valerianæ
Catechu	Hyoscyami	Zingiberis
Cinchonæ	Jalapæ	

This was a fairly good beginning for a new process. The fact that the London Pharmacopœia did not adopt the process during the sixteen years following the Edinburgh move must not be taken to mean that the process was not appreciated in England, because one of the first papers communicated to the Pharmaceutical Society in 1841 (by Mr. Henry Deane) was on this subject, and one effect of that paper was to bring out the fact that percolation had been practiced by English pharmacists for years. We have no desire to belittle the excellent work in percolation which American pharmacists have done, but before the century dies it might be well for British pharmacists to remember that they and their forefathers have been percolating officially and unofficially for sixty years, although they have not made much fuss about it.

History of Alcohol.

That druggists played an unenviable part in the liquor question a century and a half ago as well as to-day is brought out in the continuation of C. E. Pellew's article on the History of Alcohol which appears in the July number of Appleton's Popular Science Monthly.

The famous "Gin Law," passed in 1736, is interesting as the earliest severe blow at liquor dealing among civilized nations. It levied a tax of twenty shillings a gallon on spirits, and a license of fifty pounds for any selling or dealing in it. And, being in advance of public opinion, it failed much as other, more stringent, prohibition laws have failed in our own day. For the cry was at once raised that it taxed the poor man's gin, and let the rich man's wine go free. Every wit, every caricaturist, had his fling at

* From Chemist and Druggist.

it. Ballads were hawked round, telling of the approaching death of Mother Gin. The liquor shops were hung with black, and celebrated unproariously Madame Geneva's lying in state, her funeral, her wake, and so on. The night before the law went into effect, so the contemporary journals say, there was a universal revel all over the country. Every one drank his fill, and carried home as much gin, besides, as he could pay for.

To evade the law, apothecaries sold it in vials and small packages, sometimes colored and disguised, generally under false labels, such as "Colic Water," "Make Shift," Ladies' Delight." There were printed directions on some of these packages—e. g., "Take two or three spoonfuls three or four times a day, or as often as the fit takes you." Informers were very prominent and exceedingly offensive, inventing snares to catch lawbreakers for the sake of the heavy rewards, and spying and sneaking around in a way particularly distasteful to the English mind. In consequence, they suffered in their turn. The mere cry "Liquor spy!" was enough no raise a mob in the London streets, and the informer was lucky to escape with a sound trashing and a ducking in the Thames or the nearest horse pond. Indeed, such an outcry was made about the matter that the ministry became very unpopular, und the law was not enforced after two or three years, and was largely modified in 1743, after seven years' trial.

In Memoriam.

Victor Kostka.

Victor Kostka, for several years president of the New York German Apothecaries Society, died July 5, at the age of forty-six. Mr. Kotska was a native of Posen, Germany, where he served his time as apprentice and assistant. He came to New York about 25 years ago and for a number of years has figured prominently among the German pharmacists of that city.

Professor Schuetzenberger.

Professor Schuetzenberger, the French chemist, died June 25, at an age of about 67 years. He was born in Strassburg, Dec 23, 1829. He studied medicine in his native city and took his doctor's degree in 1855. He commenced his career as a chemist in the chemical laboratory of the Conservatoire des Arts et Metiers. After having held several positions as teacher of chemistry he was appointed Professor of Chemistry at the College de France in 1876. He was also director of the Municipal School of Physics and Chemistry. Since 1884 he was member of the Academy of Medicine, in the Section of Medical Chemistry; and in 1888 he was chosen to fill the seat of the chemist Debray at the Academy of Sciences. Besides being a teacher he was an author and investigator. The vegetable alkoloids were his field during the last year.

P. C. Plugge.

Dr. Pieter Cornelis Plugge, Director of the Pharmaceutical Laboratory of the University of Groeningen, and Professor of Pharmacy and Toxicology in the same university, died on Wednesday, June 30, at Buitenzorg, Java. He had been sent to the Royal Gardens there on a scientific mission by the Dutch government.

He was born at Middelburg, in Holland, in 1847. He received his education at his native town and at the Athenaeum at Amsterdam. In 1868 he passed his pharmaceutical examination, and for the next eight years he acted as assistant in Amsterdam and Groeningen. In 1876 Dr. Plugge was appointed director of the pharmaceutical laboratory at Tokio, and adviser to the Japanese government on questions of hygiene and chemistry. After two years he returned to Groeningen to take the chair of pharmacy and toxicology. An important pharmaceutical laboratory was built under his direction and here he did most of his well known scientific work on the alkaloids. His book on the variations in the chemical composition and pharmaco-dynamic value of certain important remedies was translated into German by Professor Schaer in 1886.

Personals.

Professor Virgil Coblentz is spending part of his vacation at work in the laboratory of Prof. A. Hilger in Munich.

Dr. H. H. Rusby has gone to the Royal Herbarium at Kew where he expects to work on his collections of South American plants. He has recently received the appointment of Professor of Materia Medica at the Bellevue Hospital Medical College.

The Hanbury Medal has been awarded this year to Dr. John Elishee De Vrij of the Hagne, Holland. Dr. De Vrij; who by this appointment has become the ninth Hanbury medallist, is well known as quinologist having entered upon his career as cinchona specialist even before 1857 when he was sent to Java by the Dutch government.

Prof. L. S. Cheney, Professor of Pharmaceutical Botany at the University of Wisconsin, is in the northern part of the state with a staff of assistants working on the flora of Wisconsin. In addition to the collections made for the University Herbarium Prof. Cheney this year intends to work as botanist for the Natural History Survey made possible by an appropriation by the legislature of last winter.

President Morrison of the Am. Pharm. Assn. has appointed Joseph P. Remington, of Philadelphia, and Louis Dohme, of Baltimore, with Frederiek B. Power, of London, and Adolph Meyer, of New Orleans, as alternates, to represent the assoeiation at the International Pharmaceutical Congress to be held at Brussels this month.

Among those knighted during the reeent British Jubilee are to be found the names of Dr. Edward Frankland and Mr. William Crookes. As chemical students know, Frankland began his investigations about fifty years ago and his name has since been closely associated with the study of the paraffin hydrocarbons and their radicles. He has taught chemistry at several institutions and from 1871—73 was president of the Chemical Society. Mr. Crookes has been editor of the Chemical News for several decades, bnt is also an investigator. He discovered thallium in 1861 and during the last year or two his name has become quite popularly known in connection with the tubes used in X-ray photography.

Prof. J. U. Lloyd of Cincinnati, who received the degree of Master of Pharmacy at the last commencement of the Philadelphia College of Pharmacy has more recently been honored by the State University of his own state with the degree of Doctor of Philosophy.

Bibliography.

Die Fabrikation der Kartoffelstärke by Prof. Dr. O. Saare, Director of the laboratory of the Verein der Stärke-Interessenten in Deutschland, is announced as just out by Julius Springer.

Systematic botanists, in fact, all students of field botany will be delighted with the appearance of vol. two of the Illustrated Flora of the Northern States and Canada by Britton and Brown. Subscriptions may be sent to the publishers Chas. Scribner's Sons, N. Y., or to Prof. N. S. Britton, Columbia University, N. Y.

Students and lovers of ferns may be interested in The Fern Bulletin, an illustrated 16-page quarterly edited by Willard N. Clute. A sample copy may be had free by addressing The Fern Bulletin, Binghamton N. Y.

A text book of general lichenology, with descriptions and figures of the genera occurring in the Northeastern States, by Albert Schneider is announced by W. N. Clute & Co., Binghamton, N. T. Dr. Schneider, for two years Fellow in Botany at Columbia Univerity, is the recently appointed Professor of Pharmacognosy at Northwestern University.

Commercial.

The Statistische Jahrbuch für das Deutsche Reich contains some interesting information regarding the number of physicians and apothecaries. In 1887 there was one physician to every 34.16 km. square, in 1896 one to every 22.60. There was one apothecary to every 115.51 (1887) and 103.92 (1896) km. square respectively. Of physicians there was one to every 2961 inhabitants in 1887 and one to every 2187 in 1896. In 1887 there was one pharmacy to every 10,012, in 1896 to every 10,052 inhabitants. Whereas the number of physicians has increased relatively to that of the population, that of pharmacies has decreased. The ratio, however, varies considerably in different states and provinces. Whereas there has been a diminution in some places there has been an increase in others, e. g. Berlin.

Catalogues received:—

Druggist Circular—N. J. Price list, July 1897.

Fritsche Bros.—N. J. Wholesale price list, June 1897.

G. & R. Fritz—Wien. Vorzugspreise. Anfangs Juli 1897.

The Roessler & Hasslacher Chem. Co.—New York. Price list Nos. 97 and 98.

E. R. Squibb & Sons—Brooklyn. Semi-annual price list of standard pharmaceutical preparations and pharmaceutical reagents. July 1, 1897.

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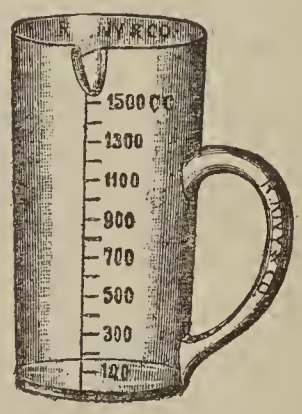

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SUPPLEMENT, SEPTEMBER 1897.

Universities and Colleges.

University of Berlin.

Several years ago pharmacy was recognized by the University at the national German capital by the appointment of Dr. H. Thoms as Privatdocent in pharmaceutical chemistry. It is now reported that the position has been raised to the rank of a professorship.

The Experimental Field on the Brocken.

According to the Pharm. Zt. it has been reported from the Harz that Prof. Peters of Goettingen has been enabled to purchase 450 additional alpine plants and 750 conifers. The experimental field can thus be extended and experiments outside of this field will be made. For those not acquainted with this undertaking it may be well to add that Prof. Peters some years ago began to transplant an alpine flora to the Brocken, this famous mountain of the Harz, and that he appears to have met with considerable success thus far.

Cleveland School of Pharmacy.

This school which since last year gives a three year's course, of about seven months each, leading to the degree of Pharmaceutical Chemist, has further strengthened itself by the addition to its instructional force of Dr. Henry V. Arny as Professor of Pharmacy and Director of the Pharmaceutical Laboratory. Dr. Arny of New Orleans is a graduate of the Philadelphia College of Pharmacy and has spent several years in Europe, studying especially at the Universities of Goettingen and Munich. He took his degree at the former university, working under Prof. Wallach. His doctor's dissertation was duely noticed in this journal.

Prof. Beal of Scio, O., is enlisted as Lecturer on Pharmacal Jurisprudence.

A Psychological Museum.

Among the many valuable scientific collections in Florence there is, according to P. T. L. in the Nation, 65, p. 48, one that for the unique purpose of its display deserves some attention. The "Musée indien fondé par A. de Gubernatis" (mentioned in Baedecker, "Italie Septentrionalé," pp. 365 and 410, ed. 1895) forms part of the Section of Anthropology in the Instituto dei Studii Superiori, and chiefly exists for its ethnological and anthropological interest.

There are in this museum two small rooms and a cabinet to which an unusual measure of interest attaches, both because of the original idea implied in their foundation and from the number of singular objects they contain. These constitute the "Psychological Museum" established by Prof. Montegazza in 1889, under the sanction of a royal decree of that date. Prof. Montegazza's intention is to illustrate, or symbolize, human passions, sentiments and so forth, with the help of objects, which serve in their expression or their gratification, or both. In view of this, human feelings have been divided into the sentiments of Religion, Cruelty, Vainty, Caricature, Property, and Sentimenti Diversi, to each of which one or more cases in the museum have been allotted.

By far the largest part of the collection, numbering some 1487 exhibits, consists of objects illustrative of the religious sentiment, with the subdivision of superstition in some of its commonest forms. One of the most curious things discovered in this department was a special form of prayer for curing babies of worms. As an illustration of the unexpected way in which a familiar and venerable superstition may be applied to thoroughly modern conditions, one notices, close by, the badge or ticket of Bed No. XIII in a hospital at Florence, which a woman refused to occupy. Less easily accounted for is the belief among Ligurian fishermen and sailors that two plain unblessed bits of string (No. 293) when tied around the ankles, are a guard against cramps. In the present writer's school days, it was generally held among the boys, on especially warrantable grounds, that two crossed horsehairs in the palm of the hand would not only prevent pain altogether, but infallibly break the cane.

Catalogues received:—

Brooklyn College of Pharmacy—Brooklyn, N. Y. Seventh annual announcement. Session of 1897—98.

Cleveland School of Pharmacy — Cleveland, O. Sixteenth annual announcement, Session of 1897—98.

College of Medicine, Syracuse University—Announcement 1897—1898.

Missouri Medical College—St. Louis, Mo. Fifty-seventh annual announcement. Session 1897—98 and catalogue of session 1896—97.

New York Medical College—N. Y. Annual announcement. Thirty-fifth session 1897—98.

Rush Medical College—Chicago, Ill. Fifty-fifth annual announcement 1897—98.

St. Louis College of Pharmacy—St. Louis, Mo. Prospectus: thirty-second annual session, 1897.

Western Pennsylvania Medical College—Pittsburgh, Pa. Announcement 1897—98.

Scientific Societies.

American Pharmaceutical Association.

The forty-fifth annual meeting of the American Pharmaceutical Association was called to order by President Joseph E. Morrison of Montreal at 3 o'clock Tuesday afternoon, August 24, at the Hotel Lafayette, Minnetonka Beach, Minnesota. The association was welcomed by Senator C. K. Davis on behalf of the state and the Twin Cities, and by Professor Wulling on behalf of the Minnesota Pharmaceutical Association, which convened at Lake Park Hotel, also on the shores of Lake Minnetonka. Professor Good of St. Louis responded for the association.

President Morrison in his address emphasized the need of better educated pharmacists, the necessity of elevating the calling along various lines and of preventing offenders of the liquor law from seeking protection under the name of pharmaceutical licentiates.

After adjournment the nominating committee met and decided to recommend the following ticket: — President: H. M. Whitney, Lawrence, Mass.; First Vice-President: G. C. Bartells, Camp Point, Ill.; Second Vice-President: W. S. Thompson, Washington, D. C.; Third Vice-President: J. A. Miller, Harrisburg, Pa.; Treasurer: S. A. D. Sheppard, Boston, Mass.; General Secretary: Chas. Caspari Jr., Baltimore, Md.; Reporter on the Progress of Pharmacy: C. Lewis Diehl, Louisville, Ky.; members of the council for a term of three years: G. F. Payne, Atlanta, Ga.; W. A. Frost, St. Paul, Minn., and Caswell A. Mayo, N. Y.

The evening was taken up by a reception and promenade concert tendered the national organization by the Minnesota Pharmaceutical Association.

The Second General Session was called after 10 o'clock Wednesday morning. The report of the nominating committee was received and the ballot of the association cast for the nominees of the committee. The reports of the committee on membership, of the Reporter on the Progress of Pharmacy, of the Secretary and Treasurer were read and received. The report of the Committee on Prizes recommended the award of the first general prize to J. M. Knox and A. B. Prescott for their valuable paper on The caffeine compound in kola; the second to S. P. Sadtler for his paper on the Destructive distillation of linseed oil; the third to W. O. Richtmann and E. Kremers for the continuation of their work on The menthol group. The Ebert prize, which has not been awarded since 1891, and which is restricted to original investigations of an applied character, was awarded to the recipients of the first general prize.

The **Commercial Section** had a short session during the afternoon. Mr. Lewis C. Hopp of Cleveland, O., read his address as chairman in which he recommended action to be taken with regard to the trade-mark problem. No papers were presented and there was little other business of a routine nature. The officers elected for the following year are: President: Joseph Jacobs, Atlanta, Ga.; Secretary: J. H. Bobbitt, Raleigh, N. C.; Associates: N. A. Rohm, Omaha, Nebr., and H. F. Hassebrock, St. Louis.

In the evening President Cyrus Northrop of the University of Minnesota addressed the audience on Modern tendencies of educational methods.

The first session of the **Scientific Section** was to have taken place Thursday morning. The Ladies' Auxiliary, however, had arranged a trolley tour of Minneapolis and St. Paul "for the visiting ladies and their escorts." A canvass had been taken the day previously and about one hundred persons expressed their intention to go. On Thursday morning, however, the fair weather and the gay departing sight seers proved too much of a temptation. Not only where the morning and afternoon sessions thus broken up, but the ladies' committee, not prepared for so large a crowd, was greatly embarrassed. Nevertheless the trip was greatly enjoyed, Lake Harriet, Minnehaha Falls, the State University, Lake Como etc. being visited. Luncheon was served at the University Gymnasium. Toward evening the party returned from St. Paul to Minnetonka Beach by train.

While most of the members were enjoying this outing the officers of the section with such others as they could bring together transacted as much as possible of the routine business. The first and second sessions being thus disposed of, the third session of the **Scientific Session** was called to order by chairman Wm. C. Alpers of New York, who proceeded to deliver his address. Papers and reports were then read and discussed:

A. B. Prescott: Alkaloidal combinations in caffeine bearing plants. This is a continuation of last year's work. (See p. 172.)

E. Kremers: Volatile oils and their assay; part of a report made at the request of the section and of the Special Committee on Research. (May appear in a later number of the Review.)

A. B. Prescott: Report as chairman of the Special Committee on Research. Eleven papers by almost as many authors were reported upon by the committee. A chemical bibliography of morphine, 1875 to 1896 was prepared by the clerk of the chairman. (This will appear later in the Review.) Edward Kremers and A. B. Lyons were elected members of this committee for two years.

Leo Eliel: Report as chairman of the Committee of Revision of the U. S. Pharmacopœia. This committee is the A. Ph. A. committee and should not be confounded with the committee elected by the decennial conference at Washington. Parts of the report of this committe were discussed at some length but no action in the way of recommendations was taken.

Joseph Feil: Practical notes.

C. S. N. Hallberg: On the solubility of pills.

Wm. C. Alpers: Aralia nudicaulis.

Owing to the lateness of the hour a number of papers presented by persons not at the meeting had to be read by title only. The Section on Education and Legislation was requested to permit the reading of a number of other scientific papers in that section if time permitted. The following officers were elected for the coming year: Chairman: E. Kremers, Madison, Wis.; Secretary: A. B. Lyons, Detroit, Mich.

The first session of the **Section on Education and Legislation** was called to order by chairman C. S. N. Hallberg, Friday morning; the first number on the program being the reading of the chairman's address. Several reports were read or made orally, the summary of answers to main questions of the committee's circular of investigations being presented by the chairman of the committee and section. Papers were then read and some of them discussed.

E. S. Dawson: Should a pharmacy law be uniform territorially.

H. M. Whitney: Should pharmacists or the state support the pharmacy law and the board.

Jos. Jacobs: Uniform pharmacy law—as to place of registration.

A. B. Prescott: On provisions of a poison law, and measures of its enforcement.

L. E. Sayre: Shall a compulsory curriculum be established in lieu of registration by diploma?

Jos. Jacobs: Practice and ownership in pharmacy.

Harry B. Mason: Concerning the questions given in state board of pharmacy examinations.

The second session of the **Section on Education and Legislation** was called to order in the afternoon. The report of the committee appointed by special reso-

lution last year was submitted and read as a report by the chairman only and without discussion was ordered printed, copies to be sent to the various organizations. The committee on National Legislation reported through its chairman F. E. Stewart.

The section adjourned shortly before four o'clock to permit its members to take part in the steamer ride through the Upper and Lower Lake, a two hours trip that proved most enjoyable. The evening was given over to a concert under the auspices of the Ladies' Auxiliary Committee.

The third session of the **Section on Education and Legislation** was held Saturday morning. The following papers belonging to this section were read:

J. H. Beal: Note on the relation of the pharmacist to the pharmacy law.

F. E. Stewart: Should pharmacists prescribe over the counter.

H. M. Whelpley: Report on the use of the metric system in 233,000 prescriptions.

Jos. Jacobs: A distinguished physician-pharmacist.

The following papers referred to this section by the scientific section were also read:

C. Flexnor: Medicine of the Swampy Cree Indians of the north.

L. E. Sayre: Taraxacum root.

Wm. F. Alpers: Prescription filing.

Several other papers were read by title only. The section elected the following officers: Chairman: J. H. Beal, Scio, O.

The final **General Session** was called to order Saturday afternoon by President Morrison. Reports of committees were read and received, among them those of the committees on tax-free alcohol, on beneficiary features and on the meeting of 1900. The minutes of the various meetings of the council were also read and approved.

With this session the official work of the association came to an end. The evening was given to a hop, and on the following Monday those who remained enjoyed the excursion to Taylor's Falls and the Dallas of the St. Croix. For the benefit of those who intended to go to the Yellow Stone Park the social session was extended another week.

British Pharmaceutical Conference.

The thirty-fourth annual meeting was called to order by President Chas. Symes in the hall of the Grand Hotel, Glascow. After the customary greetings the President delivered his address, which on account of the jubilee year was principally of a retrospective character. The following papers were read:

John Attfield: Note on the word asafetida.

E. H. Farr & R. Wright: Further note on the pharmacy of *conium maculatum.*

Wm. Findlay: Preliminary note on the action of certain preparations and active principles of *conium maculatum.*

J. C. McWalter: Some observations in organotherapy.

J. C. Umney & R. S. Swinton: Further observations on commercial oil of citronella.

F. Dunlop: The pharmaceutical value of Sumatra benzoin.

G. G. Henderson: Notes on some soluble compounds of arsenic.

L. Atkinson: Pharmaceutical ethics — a retrospect.

R. Brodie: Note on syrupus ferri quininae et strychninae phosphatis (Easton's syrup).

C. T. Tyrer: Hypophospites.

F. C. J. Bird: Medicinal petroleum.

G. C. Druce: The salient features of the Scottish flora.

C. A. Seyler: Note on the strength of commercial samples of alkaloidal tinctures.

W. G. Stratton: Phosphates and platinum.

W. G. Stratton: Liquor bismuthi et ammonii citratis.

S. Rideal: Disinfectant soaps.

G. Sharp: Our present knowledge of the mydriatic group.

Belfast was selected as the place of meeting for next near. Dr. Charles Symes of Liverpool was reelected President; John Moss of London, Treasurer; Asst. Secretary, J. C. Nightingale; Editor of the Year-Book, Louis Siebold; also vice-presidents and other officers.

Annual Meeting of the Society of Chemical Industry.

The Society of Chemical Industry held its annual meeting at Manchester, beginning Wednesday, July 14. A large number of members were present. The report of the Council stated that the number of members on the register is now 3,026, compared with 2,971 at the last annual meeting. During the year 104 papers have appeared in the Journal. Dr. Schunck, one of the oldest Fellows of the Chemical Society, having been elected in 1842, and now retiring President of the Society, delivered a very interesting address.

The following were elected as Members of Council:— President; Prof. F. Clowes, D. Sc., Nottingham. Vice Presidents: David Howard, London; Ivan Levinstein, Manchester; A. Gordon Salomon, London; Dr. W. Jay Schieffelin, New York; Dr. Edw. Schunck, F. R. S., Manchester; Wm. Thorp, D. Sc., London. Ordinary Members of Council: Sir David Gamble, Bart, C. B., St. Helens; Prof. J. J. Hummel, Leeds; John Pattison, Newcastle; Walter F. Reid, London. Honorary Treasurer: E. Rider Cook, London. Hon. Foreign Secretary: Ludwig Mond, Northwich.

After the annual meeting the members lunched together at Owens college and in the afternoon they had a very pleasant garden party at the President's residence.

Fourth Annual Meeting of the German Electrochemical Society.*

At the fourth annual meeting of the German Electrochemical Society held at München more than 200 attended. Among those present were many men, prominent in the field of chemical and electrochemical science; Dr. Böttinger, director of the Farbenfabriken vormals Friedrich Bayer & Co., Elberfeld; Prof. Ostwald, Prof. Wagner, of Leipzig; Prof. Nernst, Göttingen; Dr. Borchers, Duisberg; Commerzienrath Holbs, Eisenach; Geheimrath v. Bayer, Prof. Hilger, München; and others. At the reception held in the "Münchener Hofbräuhaus" there were present, besides the guests from other cities, also the authorities from the University and the Technische Hochschule. The chairman of the

* The Review is indebted to Dr. J. A. Mjoen of Munich for this report as well as for abstracts of papers read.

local committee at München welcomed the guests, after which Prof. Ostwald, as chairman of the meeting, gave a toast.

First Session.

Prof. Ostwald in the chair. After a short address by Prof. Ostwald the reading and discussion of the scientific papers took place. Prof. Linde of München, opened this part of the programm by giving a lecture on an Apparatus for liquifying air and for producing very low temperatures. Prof. Ostwald next spoke on Scientific and technical education in Germany. The speaker said that Germany had attained a technical as well as scientific superiority such as no other country could show, and he believes to be able to trace this back to the better scientific training of its chemists. In England and also in France, technical education is well provided for, but, and especially in England, the young chemist is often kept away from the factories, whereas in Germany chemical science is heartily supported by the factories. Another reason the speaker thinks to find in the hard examinations given in France and also in England, which aid the student neither to independent thought nor stimulate him to original work. The higher the requirements for examination, the less time will the student have for original thought and work, and it is in this scientific work that the speaker seeks the basis for the superiority of the German chemist. Prof. Ostwald then spoke against the motion to compel the chemist to take a state examination. In the discussion which followed Dr. Böttinger spoke on the affirmative, v. Bayer and Victor Meyer on the negative. The latter said that the greatest stress ought to be laid upon independent investigation, in other words, upon the dissertation of the applicant. Dr. Böttinger's proposal to make a request to the government to institute such a final state examination was defeated by a large majority.

Calcium carbide and Melting and Distillation of Metals was then given by Joh. Pfleger of Frankfort.*

The committee on electrochemical units of measurement then made the following propositions:

1. Conductivity is to be expressed in ohm and centimeter; the unit of conductivity is therefore possessed by a liquid, which, in the form of a cube of 1 cm. edge, has the resistance of 1 ohm.

2. Molecular conductivity is the conductivity defined under 1., divided by the number of gram molecules dissolved in 1 c.c.

3. The quantity of electricity necessary to separate one gram equivalent, namely 96540 coulombs, is to be represented by F. (in remembrance of Faraday) in abbreviation.

The propositions were unanimously adopted.

Dr. Böttinger next spoke on the motion made by many of the members and generally approved by the committee, namely, "To send an expert to North America in order to study the condition of electrotechnique in that country." The speaker approved of the motion heartily and emphasized that in the first place it would be necessary to obtain the moral help of the Reichsregierung. The expense was to be paid in part by the society, the remainder by voluntary subscription. The expense can be estimated at about 4000 M. and Dr. Böttinger therefore recommended that the committee vote for the purpose 1000 M. Commerzienrath Holbs of Eisenach in speaking of his experiences in America was warmly for the motion, which after a short debate was favorably received.

The selection of a place for the next meeting was left to the committee as usual.

* See p. 182.

Proceedings received:

XII Congrès International de Médecine — Programme préliminaire. Pamphlet, pp. 71.

—— Renseignements divers. Pamphlet, pp. 15.

Florida Pharm. Ass'n: Proceedings of the tenth annual meeting held at Jacksonville, Fla.

Louisiana Pharm. Ass'n. Report of the fifteenth annual proceedings, New Orleans, La.

Manitoba Pharm. Ass'n. — Proceedings of the first annual convention held in Winnipeg, Aug. 1897.

—— Act of incorporation and by-laws. Pamphl.

Missouri Pharmaceutical Association: Proceedings 1895—96.

Pharm. Ass'n of the Province of Manitoba — Winnipeg. Announcement of lectures for 1897—98.

History.

On the Early History of Woolfat.

Prof. Th. Husemann has published in Janus, a journal edited in Amsterdam and devoted exclusively to historical and geographical medical investigation, a minute study well worth reading, upon the discovery of the healing agency, the earliest names and various modes of preparation and the uses of woolfat, the raw material of our modern lanolin. In view of the interest which this dissertation will surely awaken in pharmaceutical circles, it seems advisable to reproduce here the results of this learned investigator, as he has himself summed them up at the close of his paper.

Casting another glance at the results to which our investigations lead, writes the author, we see that the cosmetic and medical application of a product derived from the oily, unscoured wool of sheep was quite general at the time of Cæsar Augustus (Ovid, Celsus) and its use was so widespread that it formed quite an important article of trade. The statements about the much earlier (450—400 B. C.) existence and medical use of this product among the Greeks are uncertain, as the passages in the Greek writers (Herodotus, Hippokrates, Aristophanes) supposed to mention it, refer to unscoured wool (ἔρια οἰσυπηρά), but not to woolfat, besides which latter the wool containing it was much used in later years (Galen, Aretaeus, Alexander of Tralles and others).

The medicinal use of this product was not founded upon the idea, which must be considered as the inventing thought in the preparation of lanolin (which is analogous to the product of the ancients) by Liebreich, viz: the idea of deriving a material for the preparation of white salves, by emulsion of purified woolfat with water. The fact that the product derived by the various

methods described by Dioskorides and Pliny for the extraction of woolfat would become white by emulsion with water, was known to the ancients, but was used only to establish its identity, but not for pharmacotactical purposes. The directions for the production of the various woolfat preparations, which I have mentioned, from the time of Celsus to the second decade of the 19th Century show, that the water, which possibly was present in the product, was entirely irrelevant, and that also not only in the most commonly used plasters and cerates (Ennea pharmacon, Tetrapharmacon, Ceratum oesypatum Galleni and Philagrii, Diachylon magnum, etc.), but also in the softer forms, especially the Pessi, much used in gynaecological practice (Soranus, Musio, Paulus of Aegina and others) and the embrocations of the ancients in cases of muscular exertion (Damokrates, Galen and others). It was not the recognition of the applicability of perfectly purified and neutralized woolfat (which was unknown to the ancients) in the preparation of salves, but the belief that the fat of sheeps wool had peculiar healing properties in certain cases of sickness, which determined its medicinal use in ancient times.

These indications of the medicinal application are based chiefly not on the observation of the action of woolfat applied alone, but on the action of medicines in which it was used. The healing action observed in the application of the so-called Acopa, in which it was used, is surely not a specific effect of woolfat, but is attributable to the friction and massage caused in the application of the Acapon. In the action on the uterus, the woolfat of Pessus is of less importance than Pessarium, with which it was introduced. The peculiar influence upon conception attributed to woolfat in the middle ages and the effects in cases of syphilis, supposed to have been observed in the 16th Century, must be accounted for by the easy faith of the physicians of those times.

The woolfat, which was an article of trade at the time of the first Cæsars, especially the choicest of Attika, although according to the directions for preparation it can have been neither white nor neutral, and seldom free from impurities, was undoubtedly far better than the preparations that appeared in the drug shops in the middle ages and in the 16th, 17th and 18th Centuries, which toward the end of the 16th Century was described as stinking.

This deterioration must be considered the principal cause of the disappearance of woolfat from the store of medicines. Mesuë jun. attempted to take the preparation out of the hands of the shepherds and give it to the apothecaries, by prescribing a mode of preparation much different and simpler than the old, yet he did not succeed in producing a suitable preparation. The reintroduction of Dioskorides' directions for preparations by the pharmacopœias of the 16th Century caused the apothecaries great trouble and annoyance, and ultimately led to the protest of Zwelfer in the Pharmacopœa Augustana Reformata against the retention of this remedy in the medical books. Nevertheless the product, prepared essentially after the direction of Mesuë, was retained longer than is generally supposed (being found in the Spanish Pharmacopæa of 1817). In France the Codex medicamentarius of 1758 mentions woolfat as Oesipi among the Simplicia.

If a classical term is desired for the woolfat product, which is to be considered the precursor of lanolin, the Latin form Oesypum is preferable. The form Oesypus was derived from the Greek ὄισυπος by the physicians of the 16th Century. The form Hyssopus, as the article was usually called in the officinals, and to which was added "humidus" in order to distinguish the woolfat from the herb Isop, which was termed "siccus," is not a barbaro-latin form, as is usually said; on the contrary it can be traced to Pliny and was used by various Greek and Roman authors. The form was not originated by the Arabians, but was transferred from the Greek to the Arabian authors.

Bibliography.

Der elektrische Ofen, the authorized German edition of Moissan's recent work, by Dr. Theodor Zettel, has been published by M. Krayn of Berlin W.

The August number of the American Journal of Pharmacy contains a biography of the late Professor Edson S. Bastin, from the pen of his colleague Prof. H. Trimble.

The use of the Thyroid gland in medicine, a subject that is of special interest at present, is described in the August number of Appleton's Popular Science Monthly by Dr. P. Bailey.

Paul Dupont of Paris announces as about to appear a Nouvelle Flore de Lichens pour la détermination facile des espèces sans microscope et sans réactifs, avec 1178 figures inédites, by A. Bristol, Professor at the University of Paris.

Die Natur contains a series of papers on animal pharmacognosy by Prof. O. Taschenberg, the editor of the journal; another on the derivation of common botanical names. Both papers are very interesting and merit attention on part of pharmacists.

Appleton's Popular Science Monthly for this month contains two papers of special interest to pharmacists: Alchemy redivivus, by A. E. Outerbridge; and Fourteenth-century doctors, by M. E. Nicaise, translated from the Revue Scientifique.

The Beiträge zur wissenschaftlichen Botanik, edited by Prof. M. Fuenfstueck, the first volume of which had been published by Erwin Naegele of Stuttgart, will hereafter be published by A. Zimmer's Verlag of the same city. Part one of vol. II has just been issued and contains four contributions with five plates.

H. Lamertin of Brussels announces as soon to appear a work entitled Les théories physico-chimiques by A. Reychler, Professor at the University of Brussels. The same firm announces Documents sur la composition normal des principales deurées alimentaires and boissons usitées en Belgique. This work is written by a large number of specialists.

In connection with their exhibit at the Sächsich-Thüringische Industrie- u. Gewerbe-Ausstellung taking place at Leipzig at the present time, the firm of Schimmel & Co. have issued a descriptive catalogue which, like all their publications, is of more than common interest and possesses a permanent value. The brief description of the history of the factory and its scientific accomplishments is exceedingly instructive,

showing how much the best practical results rest on a thorough scientific foundation. The catalogue of oils, their source, physical constants and chemical composition is not unfamiliar to those who receive the semi-annual reports. The catalogue of chemical preparations, however, appears to be new and is as interesting as it is instructive.

Catalogues received:—

J. B. Baillière et Fils—Paris. Bibliographie botanique, Fascicule I. A—C.

Chemical Publ. Co.—Easton, Pa. Recent books on chemistry and allied subjects.

Jaques Leshevalier—Paris. Catalogue trimestriel de livres anciens et modernes. Botanique.

Commercial.

Pricclists received:—

Parke, Davis Co.—Detroit, Mich. Price list 1897, pp. 204.

Roessler & Hasslacher Chem. Co.—New York. Price list, Aug. 1897.

Tyler & Finch—New York. Price list.

Zimmer & Co.—Frankfurt a. M. Vorzugs-Preise Ende Juli 1897.

—— Beilage zu unserer Vorzugsliste Ende Juli 1897.

Pamphlets received:—

Böhringer & Söhne—New York. Clinical notes on lactophenin. By Dr. A. H. Roler. Reprint from the Chic. Med. Rec.

—— Clinical observations on lactophenin. By Dr. Geo. Thompson. Reprint from Tri-State Med. Journ.

Greiner & Friedrichs—Stuetzerbach i. Thuer. Quecksilber-Luftpumpe mit selbstthätigem Betrieb.

Heinrich Haensel—Pirna a. d. Elbe. Bericht über das zweite Vierteljahr 1897.

—— Extract from the quarterly report on essential oils and fruit essences, July 1897.

Lehn & Fink—New York. Antitoxins, Pamphlet, pp. 40. Illustrated.

—— The therapeutic value and administration of iron. By Dr. R. C. Kenner. Reprint from Notes on New Remedies.

Pabst Brewing Co.—Milwaukee, Wis. A plan to stop cut prices as devised by the retail druggists of the United States. Pamphlet, pp. 21.

Schering & Glatz—New York. Ueber eine neue Methode zur Desinfection von grösseren Räumen mittelst Formalin. Von Dr. Hans Aronson. Separat-Abdruck a. d. Zeitsch. f. Hygiene und Infectionskrankheiten.

—— Eucaine hydrochlorate. May, 1897. Pamphlet, pp. 80.

—— The silver treatment of wounds. By Dr. Credé. Pamphlet, pp. 8.

Schimmel & Co.—Leipzig. Descriptive catalogue of exhibit at the Saechs.-Thuer. Industrie- u. Gewerbe-Ausstellung, Leipzig, 1897.

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SUPPLEMENT, SEPTEMBER 1897.

Scientific Organizations.

Pharmaceutical Scholarships in England.

The Pharmaceutical Society of Great Britain offers annually three educational and two or three research scholarships — viz., two Bell scholarships, value 30 l. for one year and free education in the School of Pharmacy, and one Manchester Association scholarship, value 26 l. without free education. The research scholarships are the Redwood and S. M. Burroughs Memorial, each of the value of 30 l., awarded to pharmaceutical chemists only by the Pharmaceutical Council, and the Salters's fellowship, value 100 l. a year for three years. These are tenable in the Society's laboratories. The Burroughs scholarship is awarded biennially.

The Hanbury and Flueckiger Medals.

The two pharmaceutical medals prized by pharmaceutical scientists throughout the civilized world are of comparatively recent date. It is as unique as it is significant that both should have been established in honor of two men whose life was given largely to the study of vegetable drugs, men who worked together in the same field not as rivals, but as intimate friends. These two men, one an Englishman, the other a German Swiss, have erected a joint monument unto themselves in the classical history of drugs, the Pharmacographia. Their friends have honored them in the establishment of medals known by their respective names.

Flueckiger Medal.

The Hanbury Memorial was established in 1879, four years after his death. The gold medal is issued every two or more years for special achievements in the realm of pharmacognosy. The medallist is elected by the presidents of the Chemical Society, the Linnean Society and the two pharmaceutical societies of Great Britain. It is presented by the council of the Pharmaceutical Society of Great Britain. The first medal was bestowed upon Hanbury's associate and friend, Professor Flueckiger, then of Strassburg, in 1881. In 1883 it was awarded to John E. Howard; in 1885 to Georg Dragendorff; in 1887 to Wm. Dymock; in 1889 to G. Planchon; in 1891 to O. Hesse; in 1893 to J. M. Maisch; in 1895 to A. Vogl; and this year to Dr. J. E. De Vrij, the quinologist, of the Hague, Holland (see p. 31).

The Flueckiger Testimonial and Memorial was established in 1892, at the time of Professor Flueckiger's retirement from active duties at the University of Strassburg. Most of the money raised at that time was used for the endowment of a Flueckiger scholarship, or for providing grants in the aid of research. The remainder served to defray the cost of an illumined address, an album containing the portraits of subscribers, and a gold medal with replicas in bronze. Such replicas were sent by Professor Flueckiger to the presidents of the German and Swiss apothecaries' societies and of the Pharmaceutical Society of Great Britain; also to John Attfield, A. Beckurts, G. Dragendorff, J. T. Fritzsche, P. Giacosa, Thos. Hanbury, A. Hilger, Fr. Hoffmann, Th. Husemann, Th. Peckolt, G. Planchon, Ed. Schaer, E. R. Squibb, A. Tschirch. In 1894 it was also given Prof. A. Vogl of Vienna, at the time the Verein deutscher Naturforscher und Aerzte held its sixty-sixth annual session in the old Kaiserstadt.

At Flueckiger's death, however, the testimonial fund assumed the nature of a memorial fund. Amongst other important changes, it was decided to strike no more complimentary replicas of the presentative medal, but to award the gold memorial medal every five years, for distinguished services in the promotion of scientific pharmacy, the first medal to be awarded in 1897. The medal is awarded alternately by the German and Swiss apothecaries' societies. At the Strassburg meeting the German Apothecaries' Society, upon recommendation of its council, voted to award the first medal, i. e. since Professor Flueckiger's death, to Mr. E. M. Holmes, Curator of the British Pharmaceutical Societies' Museum. Inasmuch as a German was the first recipient of the Hanbury medal, it seems but courteous—disregarding other considerations for the moment—that the first Flueckiger medal should go to England.

Botanical Society of America.

The new officers are as follows: N. S. Britton, New York, president; J. C. Arthur, vice president; C. R. Barnes, Madison, Wis., secretary; Arthur Hollick, treasurer.

Pharmaceutical Fellowships in Wisconsin and Michigan.

Although the American Pharmaceutical Association and the older colleges of pharmacy have done little or nothing to stimulate graduate work, the university schools of Michigan and Wisconsin have been fortunate in securing assistance for this purpose. In 1894 5 some Wisconsin druggists provided for a fellowship which was continued during the following year. During the academic years of 1895-6 and 1896-7 two fellowships were maintained at the University of Wisconsin by Mr

August Uihlein and Mr. Fred Pabst, both of Milwaukee. The University of Michigan was favored during the same period of two years by a fellowship from Mr. Frederick Stearns of Detroit. According to reports the fellowships of Mr. Uihlein and Mr. Stearns are to be continued during the coming year.

Catalogues received:—

Scio College—Scio, O. Annual announcement of the Department of Pharmacy. 1897—1898.

Professional.

Although there may be but poor comfort in the verification of the adage that "misery loves company" it may do no harm to show that other callings suffer from reasons similar to those that have brought about the present condition in pharmacy. An evil must first be correctly diagnosed before the remedy can be applied. For this reason the two subjoined statistical notices with reference to physicians in England and lawyers in the United States may prove something more than merely interesting.

The Increase of British Physicians.*

The overcrowded state of the medical profession in Great Britain has recently been the subject of discussion in the London press, and particularly in the columns of the Standard. Medical men are not so well off now as they were thirty or forty years ago. Among the causes of this state of things are, it is urged: (1) Increased competition; (2) the enormous growth of the out-patient departments of hospitals, and the increase in the number of special hospitals; (3) the great increase in the sale of patent medicines; (4) the liberty allowed to quacks and other unqualified practitioners; and (5) the extensive prescribing by chemists and druggists. The increase in the number of practitioners has been relatively greater than the increase in the population. In 1878 there was one medical practitioner to every 1,645 persons in England and Wales; now there is one practitioner to every 1,451 only. The facilities for education among the less well-to-do classes have, no doubt, had their share in adding to the numbers who have swollen the ranks of the medical profession. The number of hospitals and dispensaries in England and Wales was 755, with a medical staff of 3,377, in 1878; in 1893, the hospitals and dispensaries numbered 928, and the medical staff 4,454.

The American Lawyer Crop.†

There are now, according to the Legal Adviser, in this "model republic" not less than 90,000 professional lawyers, or one lawyer to every 800 of the population. In the greater cities, the ratio of lawyers to other folk is still greater. In Chicago, for example, a recently compiled directory of lawyers shows that nearly five thousand lawyers are struggling for existence, or one lawyer to every 350 inhabitants. In half a dozen other American cities the ratio of lawyers to laymen is about the same. In other civilized countries the proportion of lawyers to possible clients is much smaller. France, with a population of forty millions, has only 6,000 lawyers—1,000 more than Chicago—a ratio of 1 to less than 5,000. Germany, with more than 45,000,000 population, has but 7,000 lawyers—1 to about 6,500. In Great Britain the proportion of lawyers to other folk is about the same.

Statistics show an amazing increase of annual "crop" of American lawyers in the last fourth of the centnry. In 1870, the law schools reported 1,611 students; in 1885, 3,054 students; in 1891, 6,106 students; in 1894, over 7,600 students. Last year the reported number of law schools had swollen to 85, and of law students to more than 10,000. This rapid increase of the supply of lawyers certainly has not been the consequence of an increasing demand. Instead of increasing in the ratio of the increase of lawyers, the business and emoluments of the legal profession have diminished. Mr. Edwards deems it "safe to say that, approximately, fifty per cent of the ordinary revenues of the old time law office have been cut off in recent years. Since banking institutions have engaged in the semi-professional occupation of collecting claims and rents, and loaning money, and taking securities, and since the business of conveyancing, which at one time was inseparable from a law office, is now no longer the necessary adjunct which it was, lawyers have found their income very greatly reduced." Moreover, the functions of the lawyer, obeying the inevitable law of evolution, have steadily tended to specialization and concentration. In Chicago and its environs, for example, the bulk of legal business is transacted by hardly more than one hundred law offices, leaving more than four thousand lawyers to skirmish and forage for a precarious existence as they can. It is the same in other populous centers.

One of the fields into which this skirmishing for existence is carried by briefless lawyers is the production of more lawyers. The grand army of the legal skirmishers is annually increased by increase of the number of law schools—establishments not founded to make lawyers so much as to extract from deluded young men who bamboozle themselves with the ambition to become lawyers the means of subsistence for superfluons lawyers already made, or half made. The principle on which a prodigious number of these prolific law schools are based seems to be much the same as that of our political system, namely, that the less a man knows of the science and art of administration, the better is he qualified for the administrative service of government. The consequence is a steadily increasing annual deluge of underdone lawyers cast upon the barren shore of a congested profession to struggle for existence in "ways that are dark and tricks that" are the reverse of elevating to American manhood.

* From The Nation.
† From the Scientific American.

Bibliography.

Number six of the Berichte d. d. pharmaceutischen Gesellschaft contains a biographical sketch of the late Dr. Hermann Hager by M. Holz; and another of the late Dr. P. C. Plugge by Ed. Schaer.

The following bibliographic notice is taken from a recent number of the Nation: A new Boston firm, of the class which is exercising a wholesome influence on taste in book manufacture, Richard G. Badger & Co., announces 'The right side of the car', a story by John Uri Lloyd, author of 'Etidorhpa'.

The Division of Botany of the Department of Agriculture has published a bulletin (No. 10) calling attention to three new cruciferous weeds which have been reported from several new localities in the northern United States and Canada during the past four years, in some places having already become aggressive weeds. They are *Berteroa incana* (L.) DC., *Conringia orientalis* (L.) Andrz., and *Neslia paniculata* (L.) Desf.

John Wiley & Sons of New York announced their intention to issue before Oct. 1st, a greatly improved and enlarged edition of Fresenius' Qualitative Chemical Analysis. The translation by Prof. H. S. Wells of the Sheffield Scientific School of Yale University is based upon the recent 16th German edition. Other books in the press by the same firm are A handbook for chemists of beet sugar houses and seed culture farms, by G. L. Spencer of the U. S. Dept. of Agriculture; and Quantitative chemical analysis by electrolysis, translated by Prof. W. H. Herrick from the third German edition of Prof. Alexander Classen.

The third edition of Rudolf Benedikt's Analyse der Fett und Wachsarten edited by Prof. Ferdinand Ulzer of the Technologisches Gewerbe-Museum of Vienna has just been issued by Julius Springer of Berlin. The same author jointly with Dr. A. Fraenkel has also written an Anleitung zur chemisch-technischen Analyse. Die Untersuchung der Schmiermittel und verwandter Produkte der Fett- und Naphta-Industrie, by Dr. D. Holde; and Anleitung zur quantitativen Bestimmung der organischen Atomgruppen, by Dr. Hans Meyer have also appeared recently by the same publisher.

A new illustrated monthly journal of popular botany to be called the Plant World, occupying a position intermediate between the technical botanical periodicals and the smaller amateur publications will begin its issue on Oct. 1, 1897. It will aim to present the facts of plantlife in simple, popular language and endeavor to interest those who desire acquaintance with plants and their life histories but who have no inclination for a systematic course of study. In form, it will be a 16-page octavo. The editorial staff is as follows: Editor in chief, F. H. Knowlton Ph. D., U. S. National Museum, Washington, D. C.; Associates, Mr. C. L. Pollard, Miss Clara Cummings, Mr. Walter Hough, Mrs. N. L. Britton, Miss Josephine E. Tilden and Mr. A. W. Evans. The price will be $1.00 per year. Publishers, Millard N. Clute & Co., Binghampton, N. Y.

Catalogues received:—

John Wiley & Sons — New York. Some recent publications.

Commercial.

Vegetable Drugs.

The following extract from the Report of Caesar & Loretz contains several items of more than ephemeral interest and, therefore, merits translation.

In the last ten years there has been a marked improvement in the quality and intrinsic value of vegetable drugs offered to the trade. Much of this is due to the fact that this branch has been specialized, thus leading the dealer involuntarily to a deeper knowledge of the peculiarities and special properties of the vegetable drugs. In order to give them and retain for them the standing they should have as medicines and be able to command the full recognition of the physician it is necessary that an assay of the essential constituents be given for all the more important drugs to be used in medical prescriptions. It is therefore very fortunate that a very decided interest has been displayed among scientists in the preparation of these essential or active constituents, and so it is probable that in the near future a standard of value will be fixed by statute for all the more important drugs. While these drugs will thereby become an unvarying element when applied in medical practice and not dependent on all sorts of conditions, the scientific investigation of them is to be highly valued also for the reason that the investigation has for its object only the general advancement, thus forming a commendable contrast to the scientific craze, prompted by selfish motives, for the invention of "heal-all" remedies. Notably during the last five years, a goodly number of very valuable scientific contributions have been produced in the field, and it is due to them that we are in a position today, to offer to the trade a number of important drugs, with the result of the assay of their active ingredients to which their medical effect is due. Cinchona, digitalis, opium, ipecac, cola, ergot, strophanthus, may be mentioned in this connection. These are results that would have been received with an incredulous smile 10 years ago and which today are not universally appreciated as they should be. The apathy which is manifested even in practical pharmaceutical circles toward the new results of the investigation of drugs, is of special significance to pharmacy inasmuch as it shows to what extent the flood of modern chemical remedies has crowded the interest in the pharmacognostic side of the profession to the rear. But the very revival of interest in this field and a better appreciation of the properties of the drug materials will again bring about the production of vegetable galenical preparations in pharmacy, and will restore to it, in the best interest of medicine, the indepence which it had lost in relation to many branches of industry which formerly stood beneath it. The extraordinarily rapid development during the last decades, particularly in Germany, in all the manufacturing branches that specialize for the druggist trade, is the best evidence of the change in the relation of pharmacy, and it would be stemming the tide uselessly, not to see a real progress in the cheapening and perfecting of the production of chemicals, etherial oils, etc., in factories, particulary since by virtue of this specialization the methods of testing have undergone constant improvements, whereby the pharmacist has been enabled to gain accurate control over the products offered. On the other hand it is all the more desirable, that the manufacture of simple galenical preparations, especially tinctures, extracts, etc., which can be made with the existing laboratory facilities, be reserved for the pharmacy, because the estimation of their value depends entirely upon the selection of the drug material which can be controlled, while a reliable test of the preparations themselves is possible to a limited extent only.

With the increase of the demand for the pulverized forms of drugs ready for immediate use, it has become a necessity that the apothecary be able to accurately test the drugs in their finest possible form. In recent years a great deal of attention has been given in scientific circles to these tests, and the microscope and chemical tests have furnished reliable points. It is only desirable, that increased interest be shown in this direction in pharmaceutical circles, and we are always ready to assist all those interested, with the experience we have gained from practice and with any material that may be needed.

The vegetable drugs that come into consideration mainly as popular remedies, have had an enormous increase in consumption in the last 5 years owing to the general expansion of the Kneipp cures and other natural healing methods. The Kneipp remedies specially have taken an annually increasing circuit around the globe, and the success furnishes the best evidence of how a medical nihilism carried too far, leads the people's desires for medicines into wholly opposite directions.

The result thus far of the year's vegetable harvest can not be called favorable, but on the contrary has turned more disastrous for some articles than was first supposed. The cold, damp weather in spring greatly interfered with the gathering and drying of the first articles, and later the excessive heat that immediately followed, and lasted for weeks, shortened the time for the gathering of some articles that developed too rapidly. The cultivated herbs suffered considerably from drought, and the abundant rain which came in July brought relief only partially. Discouraged by the unfavorable weather, and the small return resulting from the prevailing low prices for many wild growing herbs, the number of gatherers has decreased, particularly in Germany, so that it will need a marking up of the prices of some of the articles of little value, in order to increase the number of those engaged in this toilsome industry. In Russia, Austria and other countries growing drugs the harvest outcome is better than in Germany, so that in most articles a normal supply was obtained.

Reports and other pamphlets received:—

Boehringer & Soehne—New York. Ferratin, the ferruginous element of food. Pamphlet, pp. 22.

—— Ferratin, the natural iron compound of all food. Pamphlet, pp. 16.

Caesar & Loretz—Halle a. S. Geschäfts-Bericht, Sept. 1897.

Fries Bros.—New York. Trillat system of disinfection by the vapors of formochlorol. Pamphlet, pp. 19.

G. & R. Fritz—Vienna. Ueber Naftalan. Von Dr. C. Pezzoli. Leaflet, pp. 3.

Stallman & Fulton — New York. The newer preparations of bismuth. By Dr. R. W. Wilcox. Leaflet, pp. 4.

Price lists received:—

Caesar & Loretz—Halle a. S. Preis-Verzeichniss: Vegetabilische Drogen. Sept. 1897.

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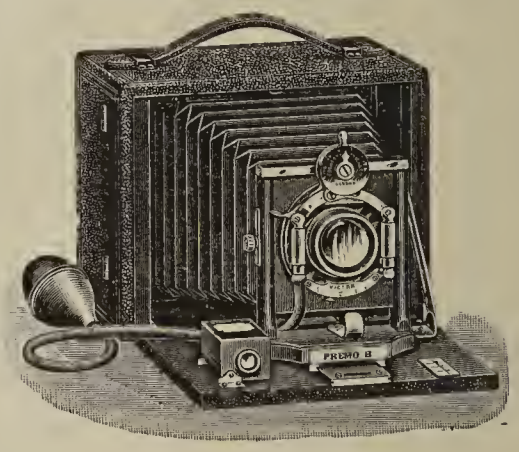

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SUPPLEMENT, NOVEMBER 1897.

Professional.

Morphinism and the Medical Profession.

The following statistical data which the Phrm. Post obtained from the Allgem. Wr. med. Ztg. seem to indicate that the morphine habit has its largest percentage of victims among physicians. Of thousand addicted to the habit the most were men and of these, physicians 287 or 40.4 p. c.; apothecaries and medical students each 21 or 3.2 p. c.; soldiers 46 or 7 p. c.; without definite vocation 100 or 14.5 p. c.; professors 3 or 0.4 p. c.; jurists 4 or 0.6 p. c.; artists 6 or 0.9 p. c.; literary men 5 or 0.7 p. c.; lawyers 7 or 1 p. c.; clergymen 2 or 0.3 p. c.; laborers 37 or 5.6 p. c. Of the women 35 or 10 p. c. were the wives of physicians; 151 or 43 p. c. without special vocation; 47 or 13.4 laborers; 50 prostitutes etc.

* A distingnished physician was heard to say that "doctors die of four things: starvation, whisky, opium and pneumonia." This was before the days of cocaine, or that drug might have been included in the list of dangers to which the active physician is exposed. We do not know how far statistics will bear out the general impression as to the abuse of alcohol and opium by physicians, and believe they would show it to be erroneous; but at present we are concerned more with the formation of such habits, and in especial the morphin habit, by patients first directed to the drug by their medical advisers.

It is well known that morphin users are not given to veracity, and one cannot therefore base an accusation upon their unsupported statements. Nevertheless we were recently much impressed by an expression used by a yonng woman, the victim of morphin, the drug having been first administered to her by her medical attendant for the relief of dysmenorrhea. He had given her paregoric, then morphin by mouth, then morphin subcutaneously; all, of course with due caution and only when in his judgment needed. The patient, as is so often the case, got to thinking she needed it when she did not. She called at her physician's office one day, professing to be in great pain, and asked him to give her an injection. His suspicion being arrousd he declined to do so, and gave her a placebo. She returned the next day for the injection, but the physician being out of town, she called on a neighbor, an oculist, who referred her to another neighbor, a clinician. The latter, suspecting the story she told to be untrue, told her to go home and continue taking her medicine, and to send for him should anything further be needed in her attendant's absence. He heard nothing further of the patient until some two months later, when, in response to a call from an unfamiliar name and address, he visited his new patient, to find the young woman to whom he had declined to give morphine at his office. The attendant was again out of town, and had left word that he should be summoned. The girl frankly confessed that she had contracted the opium habit in defiance of her physician's advice, and stated that she had made arrangements to enter an institution for treatment; meanwhile, she needed advice as to a recent "cold." She said: "Doctor, I give the morphine to myself now; I've bought a syringe, I know how to use it. When I called on you I was afraid to give myself the injection and I tried to fool you. I went right to another doctor, and got it. And that's the way I got it all along, when Dr. X refused to give it to me. I just went to any doctor's office I was passing. You and two others are the only ones that refused. With most of them, "*it's as easy as getting soda water in a drug store.*"

We do not vouch for the truth of the girl's statement. As before remarked, morphine-users are not scrupulous as to exactitude in their stories. We fear that, in some cases at least, physicians fail to use the care that they should in giving morphine to strangers, on the mere profession of pain. In how far, moreover, physicians are responsible for the growing habit formed by patients, to whom they give injections for pain, for loss of sleep, for asthmatic attacks, or other apparently good reason is a grave problem. Certain it is that, in many cases, the bold use of morphine gives relief and brings about recovery as nothing else can, and no bad habit results. Certain it is, that in other cases, one dose necessitates a second, this a third, and so on.

Whenever the drug is prescribed, the possibility of inducing a habit should be kept in mind, and its repetition be jealously watched. If due caution be thus observed, and the drug never given unless nothing else will serve the purpose, the physician need not feel responsible for untoward consequences; but, inthe absence of such caution, the blame will lie at his door.

* Editorial from The Philadelphia Polyclinic.

History.

Discovery of Anæsthesia.

The old controversy regarding the first discoverer of anæsthesia is revived by Hugh H. Young, A. M., M. D., in a paper read before the Johns Hopkins Hospital Historical Society. This paper presents the claims of Dr. Crawford W. Long. The discovery has also been accredited to Chas. T. Jackson, of Massachusetts; Wm. T. G. Morton, of Massachusetts; and Horace Wells of of Connecticut.

In 1841 Dr. Long established himself as a physician and pharmacist at Jefferson, a small country town in Jackson Co., Georgia. At this time it was fashionable to inhale laughing gas for its exhilerating effects. Dr. Long substituted ether for the nitrous oxide, and young men frequented his office for the purpose of becoming intoxicated by the inhalation. On March 30, 1842, he removed a tumor from the neck of one of these young men while the patient was under the influence of ether. During the next few years he used ether in some other small operations, but not in all that he performed. The dates at which the other claimants of the discovery first produced anæsthesia for the pnrpose of rendering a patient insensible to an operation are given as 1844 for Wells, and 1846 for Jackson and Morton.

From the evidence given there seems no doubt that Long was the first to use ether in a surgical operation. He did not print anything on his discovery until 1849, and there is no evidence that his example induced any other physician to use an anæsthetic, or even to investigate the subject. The claims of Dr. Long have been recognized by the Georgia State Medical Association and the American Association of Eclectic Physicians.

Dr. Young's paper recounts some interesting facts with relation to the patent granted to Morton, and the attempt to secure from congress a reward for the discoverer.

Dr. Long's claims are presented in briefer form in a paper read by Mr. Joseph Jacobs at the Minnetonka meeting of the American Pharmaceutical Association. Mr. Jacobs at that time did not cite all of the sourses from which he derived his information. Since then he has kindly supplied the Review with the bibliography on the subject consulted by him. It is herewith reproduced for the benefit of those specially interested in the subject:

Southern Medical and Surgical Journal. Augusta, Ga., Dec. 1859. Dr. Long's own account.

The Discovery of Modern Anæsthesia. 1894. N. Y. Publisher not given. Dr. Laird W. Nevins, Specialist, etc.

A Contribution to the History of the Discovery of Surgical Anæsthesia. Luther B. Grandy, Atlanta, Ga. Va. Med. Monthly, Oct. 1893. Also N. Y. Med. Journal, July 1895.

The Discovery of Anæsthesia. J. Marion Sims. Va. Med. Monthly, May 1877.

Contribution by H. H. Carleton, Ga. Med. Asso. Transactions 1886.

Discussions in Congress. Congress Globe, 1854.

Geo. Foy, F. L. C. S. Dublin. Surgeon to Whitmore Hospital, etc., etc., Nov. 1896. London Med. Press and Circular.

Bibliography.

A glimpse into the study of pharmacognosy is the title of an interesting article by Prof. J. O. Schlotterbeck of Michigan in the second number of The Pharmacologist.

Wandtafeln für Warenkunde und Mikroskopie by Dr. Carl Harsack, Professor at the Handels-Akademie of Vienna, are published by A. Pichler's Witwe & Sohn of Vienna. Eight charts have been published thus far.

B. G. Teubner of Leipzig has published the previously annnounced work of H. Januschke: Das Prinzip der Erhaltung der Energie und seine Anwendung in der Naturlehre, an 8vo volume of 456 pages.

Coffee and India-rubber Culture in Mexico with historical and geographical notes on the country, by Matias Romero, Mexican Minister to the United States, is included in G. P. Putnam's Sons' autumn list.

The October number which concludes the 51st volume of Appleton's Popular Science Monthly, contains an illustrated article on Science at the University of Chicago by Prof. F. Starr, and one on Early Chemical Societies by Prof. H. Carrington Bolton.

The Verlag von Wilhelm Engelmann has in the course of publication the following botanical works: Synopsis der mittelenropäischen Flora by Dr. Paul Ascherson, of which four Lieferungen have thus far appeared; also Plantae europæae, edited by Dr. M. Guerke, of which the first part appeared in 1890. The whole is to comprise four volumes.

A new edition of the Naturalists' Directory published by S. E. Cassino of Boston is now in the course of preparation. Persons who desire to make exchanges with other naturalists should send in their names and addresses at once. The Directory is American, not international, and persons who desire to enter upon exchange relations with others will find it very useful.

The second "Lieferung" of the second part of the Physikalisch-chemische Propaedeutik unter besonderer Berücksichtigung der medicinischen Wissenschaften, the first part of which was so favorably reviewed in this journal (p. 18) is to appear at the close of this year: the third or last "Lieferung" of the second part early in 1898. This work, which is of great value to all scientists and written so that it can easily be comprehended by the intelligent laity, is published by Wilhelm Engelmann in Leipzig.

According to the Zeitschrift für Bücherfreunde the National Library at Paris contains three million volumes, the Library of the Arsenal 20,000 volumes and 8000 manuscripts, the Library Ste. Geneviève 175,000 volumes and 3000 manuscripts, the Mazarin Library 105,000 vols. and 6000 manuscripts, the Library of the Institute 120,000 vols., the Sorbonne Library 125,000 vols. and 900 manuscripts, the City Library 50,000 vols. and 30,000 cuts. This enumeration does not include the innumerable lesser libraries. So much is certain that Paris is still the "bücherreichste" city in the world.

The publishing house of Urban & Schwarzenberg of Vienna has just published Fortschritte der Hydrotherapie, edited by Drs. Strasser and Burbaum with the aid of numerous colaborers including several Americans. It is a "Festschrift" in honor of Prof. W. Winternitz who took his doctor's degree forty years ago. The same firm has just begun the publication of a Lehrbuch der allgem. Therapie und der therapeutischen Methodik by Professor Eulenberg of Berlin and Samuel of Königsberg, also with the assistance of numerous colaborers. It is to be a large octavo three volume work and will be published in parts.

During the year 1896 and the first half of the present year there appeared in the American Journal of Pharmacy a series of papers on North American conifers by Professors Bastin and Trimble, the former having charge of the botanical, the latter of the chemical side of the work. Before the work was half accomplished, however, a serious check was experienced in the declining health of Professor Bastin and with his untimely death the work had to cease altogether. The reprints have been collected in the form of a very neat brochure, which will be very welcome to those who are especially interested either in the botany or the chemistry of this interesting group.

The Committee on Indexing Chemical Literature has presented its fifteenth annual report, which states that a bibliography of the metals of the platinum group, 1748—1896, by Prof. James Lewis Howe, and a review and bibliography of metallic carbides, by Mr. J. A. Mathews, are ready for publication. A bibliography of basic slags has also been completed by Mr. Karl T. McElroy. The second edition of Dr. H. Carrington Bolton's catalogue of scientific and technical periodicals, 1665—1895, which contains 8,603 titles, will shortly be published, and a supplement to the select bibliography of chemistry, by Dr. Bolton, has been completed. The latter contains about 9000 titles, including those of many chemical dissertations, and is brought down to the end of the year 1896. Progress is also being made with indexes to the literature of thorium and tantalum, a bibliography of oxygen, and a bibliography of the constitution of morphine and related alkaloids. (See p. 226.)

The Verzeichniss sämmtlicher Präparate, Drogen und Mineralien mit Erläuterungen constitutes No. 152 of the series of publications of the well known firm E. Merck of Darmstadt. Like the bulletins and annual reports from the same source, this publication is a creditable piece of work. In many respects it resembles the Merck's Index published by the New York house—on the back it is labeled Merck's Index 1897—but does not contain the price-list feature. On the whole it has much less of the features of an advertisement and more those of a scientific compilation. The major portion of the volume is occupied by a descriptive list of pharmaceutical preparations: chemical, galenical, organo-, and bacteriological, with a brief statement of their therapeutic application and doses. Inasmuch as this list includes most of the new remedies the book will be found valuable for reference by the practitioners of both the medical and pharmaceutical professions. This list of 200 pages is followed by one of 60 pages containing in alphabetical arrangement the vegetable drugs with brief information as to their origin, common names, occurence, constituents and uses. A shorter list of chemically important minerals follows next. Lists of reagents, of standard volumetric solutions, indicators, test papers, of collections for schools and colleges, etc. together with an appendix conclude the volume.

Catalogues and announcements received:—

American Book Co.—New York. Catalogue of new books issued since 1890.

Laemmert & Co.—Rio de Janeiro. Catalogo das obras de fundo. 1897, pp. 122.

Lemcke & Buechner—New York. Monthly Bulletin 1897, Nos. 5 to 8.

B. G. Teubner—Leipzig. Mittheilungen. 30. Jahrgang. No. 4.

U. S. Dept. of Agriculture—Washington. Monthly list of publications. Aug. 1897.

Commercial.

Licorice from Asia Minor.

The project of constructing a railway from the Mediterranean to Aleppo has been revived. The American consul at Alexandretta, the Mediterranean terminus of the proposed line, and the only natural harbor on the Syrian coast, estimates that caravans numbering half a million animals annually come to this port from Bagdad and the country beyond the Euphrates. There are shipped to the United States alone 60,000 camel-loads of licorice root yearly. The port is served by twenty-four regular steamers a month, besides "numerons 'tramps' and sailing ships."

The Crop of American Peppermint.*

In spite of local decreases in acreage, the American peppermint oil industry seems on the whole to be still on the gain. Two areas practically include the entire American product, Western New York and Michigan. According to Schimmel's Bericht for October, the acreage and yield for the current year will show a decided increase over 1896.

In New York, the present status is as follows:

Old plants,	560 acres	at 16 lb.	of oil	per acre	8,960 lb.
New "	740 "	" 30 "	" "	"	22,200 "
Old oil on hand					6,040 "
Total:					37,200 "

In Michigan, local frosts have interfered with the industry somewhat, especially in the Muskegon districts. The year's total crop is expected, however, to show a decided increase over last year. The crop is distributed as follows:

East Michigan	13,000 lbs.
West Michigan	79,000 "
North Michigan	25,000 "
South Michigan	55,000 "
Indiana	32,000 "
Various localities	10,000 "
Total	214,000 "

The Indiana area is here included since it lies directly contiguous to the South Michigan area.

When this year's product of both regions is estimated the total obtained is 251,000 pounds against 196,000 pounds in 1896, It is regarded as probable that there are at present in the hands of the producers in America 270,000 pounds of oil. This together with the supplies of old oil lying in New York for higher prices makes it probable that no great increase in prices is likely to take place now.

It is an interesting fact that about one-third of the total peppermint oil output in America goes to Germany.

Crude Domestic Drugs.

In a recent article on this subject, Dr. D. M. R. Culbreth† has given some facts of general interest concerning the regions supplying our native drugs and the extent and nature of impurities frequently met with.

Cimcifuga is collected chiefly in Maryland, North Carolina, South Carolina and Virginia. Canlophyllum and podophyllum are nsually present to the extent of about one percent each. Comfrey in small quantities occasionally also occurs in this drug.

Hydrastis comes mainly from North Carolina, South Carolina, Georgia and westward. That coming from the south generally contains a small percentage of *Aristolochia serpentaria* and that from westward a larger amount of *Aristolochia reticulata*. When in No. 20 to 30 powder, xanthorrhiza is added sometimes to cheapen and preserve the color.

Podophyllum comes from North Carolina, South Carolina, Georgia and the west. The chief admixture

* Schimmel's Bericht, Oct. 1897, p. 43.
† Bull. of Pharm. 1897, p. 409; from Druggists Circular.

is blood root, sometimes to the extent of two to three percent. Sometimes a like quantity of geranium is present, also a small amount of comfrey. Fall collections prove to be the best grade of drug.

Sanguinaria is collected mainly in Virginia, North Carolina, South Carolina and Tennessee. The chief adulteration is geranium (one to two percent). Small amounts of podophyllum and comfrey are also frequent.

Geranium is collected in Virginia, North Carolina and South Carolina chiefly. It is usually very pure since the most likely admixture, blood root, is higher in price. Frequently this drug is present in quantities as high as two percent. Geranium stems and leaves, a little podophyllum and comfrey are also not unusual.

Senega is derived mainly from Maryland and the South, Minnesota, St. Louis and Texas. Small quantities of blood root, podophyllum and poke root are apt to be present. Sometimes the false varieties (*Polygala alba* and *P. boykinii*) are mixed with it.

Prunus serotina bark is collected in Virginia, North Carolina, South Carolina and Maryland chiefly. The bark of the choke cherry (*P. Virginiana*) is sometimes present. The bark should be of fall collection, the amount of hydrocyanic acid present at that time being much greater than in the spring. The most serious annoyance with this drug springs from the collection at the wrong time of the year.

Viburnum prunifolium bark is collected mainly in the Carolinas, Georgia and Mississippi. Sassafras bark, from root and stem and stem bark of the black haw itself, form the chief admixtures.

Veratrum viride comes from South Carolina, Georgia and New York. A considerable amount of the beth root (*Trillium erectum*), also small amounts of podophyllum, poke root and cimcifuga are found in this drug.

Phytolacca is collected in Virginia, North and South Carolina, Georgia and westward. This is often very pure, but sometimes small quantities of burdock, podophyllum, yellow dock and dirt are found.

Asarum comes from Maryland, the Carolinas and the south. The packages examined by the author contained two percent of *Veratrum viride* and small amounts of podophyllum, blood root, black cohosh, blue cohosh and comfrey.

Angelica is a product in the main of the Carolinas and the south. The packages examined contained twenty-five percent of burdock root.

Sassafras bark comes from Maryland, Virginia, West Virginia and the Carolinas. Stem bark is a frequent admixture.

Reports and other pamphlets received:—

E. Merk—Darmstadt. Verzeichniss sämmtlicher Präparate, Drogen und Mineralien mit Erläuterungen. 1897. pp. 305.

McKesson & Robbins—New York. Blennostasine in catarrhal hypersecretion. Pamphlet, pp. 16.

Schimmel & Co.—Leipzig. Bericht. October 1897. pp. 96.

Price lists received:—

G. & R. Fritz.—Vienna. Price-Liste. Sept. 1897.

Fritsche Bros.—New York. Wholesale price-list. Oct. 1897.

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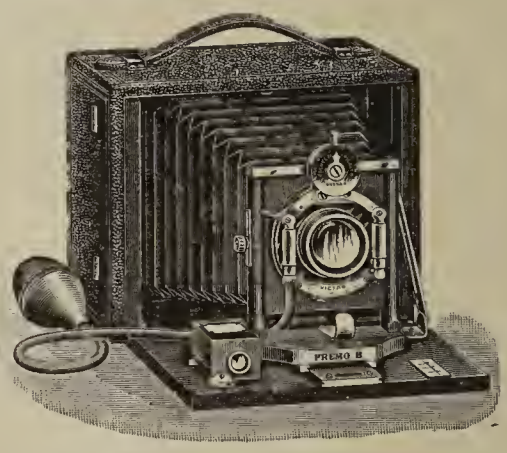

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SUPPLEMENT, DECEMBER 1897.

Scientific Organizations.

Pharmaceutical Legislation for Greater New York.

A joint committee representing the Kings County Pharmaceutical Society, the German Apothecaries Society and the New York College of Pharmacy met in New York November 11 to consider the duties of the new Board of Pharmacy to be created by the charter of Greater New York, and to discuss other matters pertaining to pharmaceutical legislation. The most important business was the consideration of a part of a proposed amendment to the law regarding registration. This provides that a registered pharmacist must have had four years' practical experience where physicians' prescriptions were compounded, and must have passed an examination before a board created by the act, or before some other board of pharmacy requiring equivalent examinations, whose examination the Board of Pharmacy should decide to be satisfactory. Assistants must have two years of experience and are to be prohibited from doing business except under the immediate direction of a registered pharmacist. Time spent in college is counted as equivalent to practical experience, for both assistants and registered pharmacists. Provisions are made for apprentices, who are not to be allowed to prepare prescriptions. All pharmacists must register within ninety days after the passage of the act and re-register at intervals of three years. The requirements of the act were endorsed by the members of the committee, but it was feared that some of them were in conflict with the provisions of the penal code. A subcommittee was appointed to secure a legal opinion on this question and to report at a subsequent meeting of the full committee.

Proceedings received:—

Proceedings of the Missouri Pharmaceutical Association 1897. Brochure, pp. 121.

Proceedings of the fifteenth annual meeting of the Michigan Pharmacentical Association, 1897. Brochure, pp. 74.

Catalogues received:—

California College of Pharmacy—San Francisco. Prospectus of the twenty-sixth session. Session 1897—8.

In Memoriam.

Ludwig Andreas Buchner.

Death has taken another whose name is well-known not only in Germany, his native land, but wherever Science and Pharmacy are studied together. Professor Ludwig Andreas Buchner died Oct. 23 at Munich after a short illness, at the age of eighty-five years.

Buchner was born July 23, 1813, at Munich where his father, Dr. J. Andreas Buchner, likewise well-known in pharmacy, was then at the head of the Centralapotheke of the city public hospitals. He studied in the Gymnasium at Landshut and later in Munich, in 1829 beginning his apprenticeship in pharmacy with apothecary Bachmann in Nuernberg. From here, Buchner went to Strassburg and later to Paris, in which place he acted as assistant to Professor of Chemistry Bussy in the School of Pharmacy and attended lectures by the same teacher. In 1834, he returned to Munich in order to pursue further his pharmaceutical studies, and after

L. A. Buchner.

two semesters he passed in a brilliant manner the governmental examinations. He now became assistant at the pharmaceutical institute in Munich and in 1839 received the degree of Doctor of Philosophy, submitting as his thesis "Betrachtungen über die isomeren Körper sowie über die Ursachen der Isomerie." A few years later he received the further degree of Doctor of Medicine, offering a dissertation on "Neue chemische Untersuchungen der Angelicawurzel." In 1842, Buchner became Privatdocent at the University of Munich. He then spent some time with Liebig at Giessen, later visiting the laboratories at Goettingen, Berlin, Leipzig and Vienna. In 1847, he was advanced to the Professorship of Pharmacy in the medical faculty of the University of Munich.

From this time on, Buchner's activities were followed by rich results, both as a teacher and as an investigator in pharmaceutical and pathological chemistry. He edited twenty-five volumes of the Neues Repertorium der Pharmacie (1852—1876), a commentary on the Pharmacopœa Germanica, to whose corps of workers he himself belonged, and a translation of Dumas' Handbuch der angewandten Chemie. Of his other numerous scientific works but a few titles can here receive mention. "Investigation of Berberine and of Aconitic Acid," "Preparation and Analysis of Tartrate of Antimony and Ammonia," "The Discovery of Angelic Acid, of Angelicin and of Rhamnoxanthin," "Observations on the Phenomena of Fermentation and Decomposition," and "Concerning the Formation of Salicylic Acid in *Spirea Ulmaria*" may be selected from the list. As an analyst also Buchner made for himself a name. In the spring of 1892 Buchner withdrew from activity as a teacher.

Friedrich Stohmann.

Karl Adolf Friedrich Stohmann, Professor of Agricultural Chemistry at the University of Leipzig, died on the 1st of November, aged sixty-five years. Stohmann, while especially well-known in agricultural chemistry, has contributed in many other directions to both pure and applied science.

He was born in 1832 at Bremen. He studied first in Goettingen under Woehler, later in London where Graham made him his assistant in the University College. After a short time at Munich, Stohmann began his career as a teacher, in Halle in 1865. In 1875, he was called to the University of Leipzig as professor, where he next served as director of the Agricultural-Physiological Institute. In 1887, the direction of the laboratory of agricultural chemistry was added. Stohmann is especially well-known for the preparation of hand-books of agricultural and technological subjects.

History.

Monument to Pelletier and Caventou.

A movement is on foot to erect a monument in Paris to Pelletier and Caventou, the discoverers of quinine.

Joseph Pelletier was born in Paris March 22, 1778, and died July 19, 1842. He was the son of an apothecary and adopted his father's profession. He was a member of the French Institute, a director of the École de Pharmacie and a member of the Academy of Medicine.

Joseph Bienaime Caventou was born in 1796 and died May 5, 1877. He became an apothecary and later professor of toxicology in the École de Pharmacie. He was also a member of the Academy of Medicine.

These two co-workers discovered strychnine in 1818, and quinine in 1820.

The Scientific Association of Upsala, Sweden, has affixed a memorial tablet to Scheele at the facade of the Lion Pharmacy in that town. The tablet bears the following inscription: "In this house lived Karl William Scheele, from 1770 to 1775. Here he discovered oxygen and other elements."

The following interesting clipping is taken from the Botanical Gazette:

Ancient Egyptian bread taken from the tomb of Mentuhotep and now in the Royal Museum at Berlin is found by L. Wittmack to still give the iodine test for starch. Microscopical study shows it to be made from barley and to contain the remains of yeast and bacteria. This indicates that barley is probable older as a cultivated grain than wheat, and that yeast, or dough of the previous baking, was doubtless used in those ancient times. The bread is estimated to be fully 4400 years old.

Bibliography.

It is announced that the ten years' supplement to the Index Kewensis, which brings the work down to the end of the year 1895, will be issued during the present year.

No. 15 of the Berichte d. d. chem. Gesellschaft contains an interesting biographical sketch of the late Professor of Chemistry at Heidelberg University, Victor Meyer, by his lifelong friend Prof. C. Liebermann.

"An Account of the Herbarium of the University of Oxford" has been compiled by the curator of the Fielding Herbarium, Mr. G. C. Druce. It is published at the Clarendon Press and gives particulars concerning the various special collections, the general collection, the British Herbarium and the Cryptogamic Herbarium.

The Year-book of Pharmacy for 1897 has appeared. It contains eighty pages more than last year. A portrait of Dr. Symes, President of the British Pharmaceutical Conference, faces the title page. The usual abstracts of work done in chemistry, materia medica and pharmacy during the year as well as various useful notes and formulæ are to be found.

Lea Brothers & Co. announce a number of new editions of medical works published by them: The twelfth American edition of Dr. A. S. Taylor's Manual of Medical Jurisprudence, revised and enlarged by Thomas Stevenson and edited by Clark Bell; Dr. Charles E. Simon's Manual of Clinical Diagnosis by means of microscopic and chemical methods, second edition, revised and enlarged; Dr. Hobart A. Hare's Practical Diagnosis: the Use of Symptoms in the Diagnosis of Disease, second edition, revised and enlarged; Dr. Hobart A. Hare's Textbook of Practical Therapeutics, sixth edition, enlarged, thoroughly revised and largely rewritten.

With its September number, the American Naturalist comes into possession of new proprietors and under the charge of new editors. It makes no large promises, but seeks to define its *raison d'être*. The new editor, as already announced, is Dr. R. P. Bigelow, of Boston, while among the associate editors the Botanical Gazette names the following botanists: C. E. Bessey, D. H. Campbell, H. M. Richards, E. F. Smith and W. Trelease. There is certainly a field for such a journal, and the responsible names connected with it are pledges of a very high character.

The Fern Bulletin is a small quarterly periodical devoted exclusively to a study of the Ferns. The October number of the current year contains about twenty pages of matter exclusive of advertisements. Two very neat cuts illustrate the harts-tongue fern and the creeping selaginella.

It is edited by Willard N. Clute. Publishers, The Fern Bulletin Co., Binghampton, N. Y. Subscription price per year, 50 cents.

One of the numerous halftones that illustrate Prof. E. P. Evans' article on Semon's scientific researches in Australia in the November number of Appleton's Popular Science Monthly is one which illustrates not less than sixteen wooden knives used by the inhabitants of the Trobriand Islands in betel chewing. The frontispiece of Carl Vogt in the same number, which is the first of the fifty-second volume, reminds one of the interesting sketches this scientist gave of Liebig in his memoirs which have attracted general attention. (See Supplement for 1896, pp. 26 and 33.)

Mr. W. T. Porter, secretary of the editorial committee of the American Physiological Society, announces that to meet the needs of investigators in physiology, physiological chemistry, physiological pharmacology, and certain other branches of biology, a special journal will be published, the first number appearing in January, 1898. The American Journal of Physiology, as the new publication will be called, will contain in each volume about five hundred pages, divided into parts or numbers, to be issued whenever material is received. It is expected that not more than one volume a year will be printed. The Journal will be edited by H. P. Bowditch, M. D., Boston; R. H. Chittenden, Ph. D., New Haven; W. H. Howell, M. D., Baltimore; Frederic S. Lee, Ph. D., New York; Jacques Loeb, M. D., Chicago; W. P. Lombard, M. D., Ann Arbor; and W. T. Porter, M. D., Boston.

Like all of the publications of Schimmel & Co. the catalogue of their library is a piece of work well done. It is not only of interest to know what the literary working apparatus of a large factory is, but it is also instructive to note the various departments of human knowledge into which the financial and commercial as well as scientific directors of such an establishment must branch out in order to attain the greatest proficiency. In the scientific departments we not only find Ostwald's Lehrbuch der allgemeinen Chemie und Victor Meyer's Chemische Probleme der Gegenwart, but also Kopp's Geschichte der Chemie, thus showing that both the most modern and the historic phases of science find a place in a modern factory. Not only is that branch of technology well represented which deals especially with the cultivation of fragrant plants and the extraction of perfumes, but geography, travel, etc., find a place with works of a more commercial and statistical nature.

Owing to the increase in the volume of matter of interest to botanists appearing in connection with the Royal Botanic Garden of Berlin, the Director, Prof. Adolph Engler, has found it necessary to issue at irregular intervals, as the accumulation of material may indicate, the Notizblatt des königlichen botanischen Gartens und Museums zu Berlin. Number one appeared in January, 1895, and Number ten in September of the current year. As interest in the German colonial possessions has increased, an interchange of plants between the garden and the colonies has been established much after the manner now existing between the Kew Gardens of England and the British Colonies. Plants of all kinds are finding their way into the Berlin garden where they are cultivated and studied; on the other hand, the Garden sends to the Colonies plants regarded as likely to prove of value in these warmer climates. Thus the Garden and the Museum have much of interest to contribute relative to the native flora of these parts and much also concerning the effect of the change of environment on the plants introduced into the Colonies. The Notizblatt aims to bring together this information in a form available to those interested. To both the student of plants from the economic standpoint and to the systematist, this periodical must prove highly valuable.

Catalogues received:—

Lemcke & Buechner—New York. Monthly Bulletin of World-Literature. Supplement 4—9.

Schimmel & Co.—Leipzig. Katalog der Bibliothek von Schimmel & Co. Januar 1897. pp. 68.

Julius Springer — Berlin. Empfehlenswerthe Werke für Pharmaceuten.

Commercial.

According to the Botanical Gazette, the Seaboard Air Line Railroad, which extends from Portsmouth, Va., to Atlanta, Ga., has inaugurated a novel system of instruction of the communities along its territory. It began by encouraging tree planting and village improvement. During the present season it has been holding one day farmers' institutes, all illustrative material and appliances, and the force of instructors being transported from place to place in a train of cars especially fitted up for the work. Another feature is the establishment of experimental farms every ten miles along the whole line; twenty-eight are now organized. Among the crops being tested are hops, ginseng, kafir corn and pyrethrum; fruits and grasses will be taken up in due course of time. Both the community and the railroad, and even the country at large, should profit by such well devised philanthropy.

Pricelists received:—

J. & A. Bosch—Strassburg. Waagen und Gewichte.

G. & R. Fritz — Vienna. Special Circular.

Fritzsche Bros. — New York. Wholesale Price-list, November, 1897.

Wm. Kraft—New York. Pricelist of microscopic stains and mounting materials, etc.

Roessler & Hasslacher Chem. Co. — New York. Price-list, October, 1897.

Reports received:—

Fritzsche Bros. — New York. Semi-annual report, October 1897. Pamphlet, pp. 88.

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Mit in den Text gedruckten Illustrationen. 1896.

Verlag von Julius Springer — Berlin.

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Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel, der Gebrauchsgegenstände sowie der hierher gehörenden Industriezweige.

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Professor an der Universität München.

Eilfter Jahrgang. Das Jahr 1896.

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